

THE IRON AGE

A Review of the Hardware, Iron, Metal Trades.

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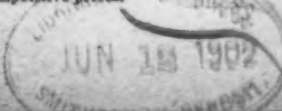
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THE IRON AGE

THURSDAY, JUNE 12, 1902.

The Robinson Automatic Polishing Machine.

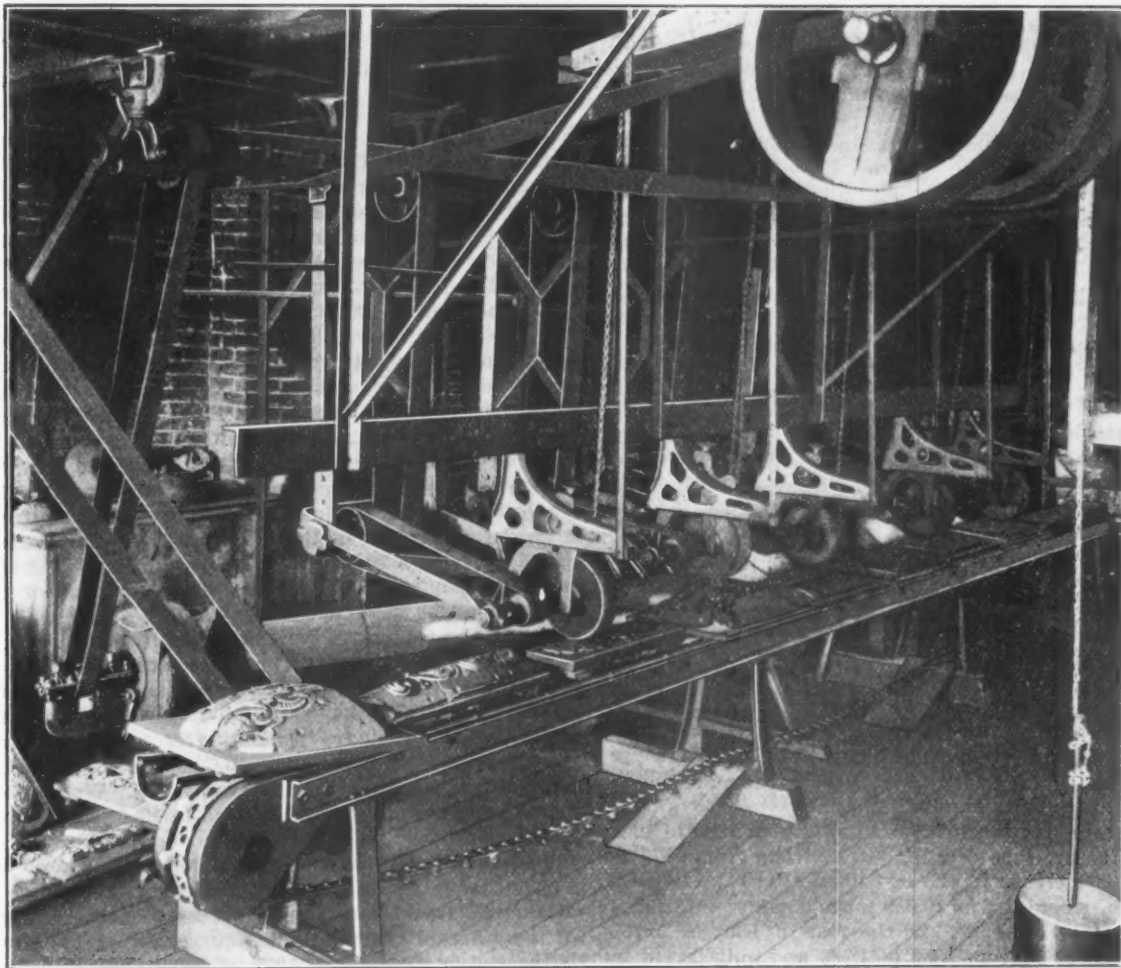
The Art Stove Company of Detroit, Mich., have introduced an automatic polishing machine designed by W. V. Robinson, the superintendent of the works. The machine, as shown in the engraving, consists of a track about 22 feet long, placed about 3 feet above the floor. Along the center of the track runs an endless chain which travels the length of the table in about 7 minutes. Along this track, and gripping the chain as a cable car grips its cable, are work holders so designed as to hold the casting to be polished.

As the casting is moved along the track it is oper-

means of which the pressure of the wheel can be regulated.

As stated above, there are now five wheels, but the machine will be extended so as to carry two more in the form of oilers or finishers. This part of the work is now being done in the old way, but with the additional wheels all the work will be done by the machine, except perhaps the finishing off of the edges on peculiarly shaped castings.

The machinists of Pittsburgh and vicinity are preparing to make a demand for an increase in wages amounting to at least 10 per cent. During the past two



THE ROBINSON AUTOMATIC POLISHING MACHINE.

ated upon by five wheels, representing the successive processes used in polishing by hand. At the present time there are three roughing and two finishing wheels employed. At the end of the track the work holder runs up an incline, is released from the chain, and carried back to the starting point for a second trip.

The wheels which do the work are carried by arms connected with an eccentric which gives them a forward and backward motion at right angles with the track. The wheels are driven by belts from an overhead shaft receiving power from an electric motor. This arrangement is clearly brought out in the engraving. The movement imparted by the eccentric can be regulated to suit the size of the casting operated upon.

Above each of the arms is a counterbalance by

weeks they have been strengthening their organization, and it is stated that at least 300 new members have been taken into the various lodges of the International Association of Machinists which make up the Machinists' District Council, with headquarters in Pittsburgh.

The Pittsburgh Coal Company, who virtually control the Northwest railroad coal service, have made another move to shut off opposition. They have bought the Pittsburgh & Castle Shannon Railroad and mines and will use the road to thwart the plans made by the Pittsburgh Terminal Coal Company, who had intended to develop, by means of the now building West Side Belt Railway, 12,000 acres of coal land in Lower St. Clair Township.

The Railroads of the World.

The *Archiv für Eisenbahnwesen*, which has now for many years published statistics of mileage of the railroads of all countries in the world with some other data, says the *Railroad Gazette*, gives a somewhat more extended review in its last number, in which the figures are brought up to 1900, and so make a record of the work of the last century. The mileage built in each decade has been for the world:

1830-40.....	4,772	1870-80.....	101,081
1840-50.....	19,198	1880-90.....	152,179
1850-60.....	43,160	1890-1900.....	107,421
1860-70.....	63,255		

The mileage built before 1830, insignificant in amount, is included with the 4772 miles credited above to the decade 1830-1840.

Decreased Construction in the Last Decade.

Of the total of 491,066 miles completed at the end of the century, more than one-half had been built since 1880 and nearly three-fourths since 1870. The total built in the 40 years down to 1870 (130,385 miles) was one-seventh less than the construction in the single decade ending with 1890. It is notable, however, that in the last decade of the century 44,758 miles less were built than in the preceding ten years. This is one of the indications that the civilized and productive industrial countries of the world are now generally well equipped with these instruments of transportation. Europe (except Russia) and North America have immediate need of no large additions to their mileage. There is still abundant room for railroads in Asia, Africa and South America, but the slow growth of industries on these continents, two of which are over rather than under populated, but whose population is to a great extent a bar to progress such as Europe and North America have had in the past century, gives no promise of rapid railroad extension.

Activity on the Eastern Continent.

Nevertheless, the most notable development of the last decade has been the greater activity in Asia and Africa. In Asia, until after 1890, there was scarcely any railroad except in British India—a very little in Asia Minor, a beginning in Russia and Japan. But the 20,960 miles in Asia in 1890 had become 37,477 miles in 1900, and the 6113 miles in Africa 12,501. The additions, considering the size of the continents, are small; but they are only beginnings, and considerable new additions have been made since 1900, chiefly the Siberian Railroad in Asia and the Uganda in Africa. It is probably not generally known that even in this last decade it is India and not Russia which leads in railroad construction in Asia; India had added 6982 miles (42 per cent.) to the 16,781 it had in 1890, while the additions in Asiatic Russia were but 4622 miles.

In Europe more railroad was built from 1890 to 1900 than in the previous decade, but less than from 1870 to 1880. The increase in the last decade was due wholly to Russia, where it was 10,659 miles, against 4413 miles in the previous decade. In the rest of Europe 29,700 miles were built from 1880 to 1890, and only 26,418 in the following decade.

Diminished Construction in America and Australia.

The most notable change in the last decade, however, is the decrease in construction in North America, which was so long the great field for railroad construction. With 2834 miles built in 1840, the increase in mileage for successive decades has been:

1840-50.....	9,099	1870-80.....	45,629
1850-60.....	23,644	1880-90.....	85,766
1860-70.....	22,887	1890-1900.....	33,856

Thus the new construction on this continent in the last decade was 60 per cent. less than from 1880 to 1890, and even 20 per cent. less than from 1870 to 1880. The decrease in the last decade was common to Canada and Mexico as well as to the United States. It was altogether healthy. Both this country and Canada, at least, are richer to-day than they would have been if they had built as much railroad in the last decade as in the one preceding it. Fully \$2,000,000,000 more than has actually been expended for new railroads would have been

required; and the indications are that the capital thus saved has been most profitably employed in productive industries—in industries which give the railroads traffic to carry.

South and Central America (including West Indies) do not cut much of a figure in the railroad world, having now altogether only 29,071 miles, or less than Asia. But down to 1870 this territory had only 2257 miles, and in 1880 even only 7292 miles. Three-fourths of its mileage was built in the last 20 years of the century, 11,656 miles from 1880 to 1890 and 10,117 from 1890 to 1900. Two-thirds of the South American mileage is in Argentina and Brazil.

Australia also has slackened its pace in railroad construction. It has room for more roads, but not people enough as yet to support them, and it grows slowly. It had 1097 miles in 1870, added 3780 by 1880, 6863 more by 1890 and only 3185 in the last decade of the century. Australia now has 14,925 miles, counting the 89 miles in the Hawaiian Islands.

Comparison of Several Quarters of the Globe.

The mileage in each of the six quarters of the globe in 1900 was:

Europe	176,212	North America.....	220,880
Asia	37,477	South America.....	29,071
Africa	12,501	Australia	14,925

Thus North America alone has more railroad than Europe and Asia together; the three old continents together have 226,190 miles; the three new ones, 264,776. The indications now are that the Old World will before long overtake the new one. As the Old World has nearly double the area and no less than nine times the population of the new, this would seem inevitable if it makes any progress.

In the closing single year of the century, 1900, the increase in railroad mileage for the whole world was 2.2 per cent., against 2.8 per cent. in the previous year. More than half the gain was in America, and nearly all of that in North America. In all Europe 3224 miles were opened, Russia leading with 1036 miles. In length of railroad Russia now stands next to the United States among nations, but at a long distance, with 35,411 miles (in Europe and Asia), against our 193,304. But if we take the whole British Empire, it is far ahead of Russia, having in all 83,822 miles. Thus the English speaking countries have 277,128 miles, or 56 per cent. of the railroads of the world.

As to the population per mile of railroad, one of the most important facts shown by these statistics, there is no important change since we commented on it last year. We are now, however, building railroads in this country faster than the population is growing, though at a very moderate rate, indeed, compared with what we have done in other prosperous periods. We had but 383 inhabitants per mile of railroad in 1900, Europe had 2267 and British India had 12,400. On the other hand, Canada had but 294 and Australia 306.

The *Archiv* gives a table, doubtless as correct as is attainable, showing the capital invested in the railroads of the different countries. The aggregate for the world is the stately figure of \$32,661,696,000, of which no less than \$18,170,114,000 has been invested in 162,225 miles of European railroads, which have an average capital of \$119,593 per mile; while the average of 263,356 miles in the other parts of the world is \$55,034 per mile. As there are 65,000 miles whose capital is not reported, we are safe in assuming that the world has \$36,000,000,000 invested in its railroads.

This enormous legacy, created entirely in the nineteenth century, is only part of the material inheritance which the twentieth century has received from the nineteenth, though it is less doubtless, even in pecuniary value, than its intellectual inheritance. The vast increase in production made possible by this knowledge and these tools should make a better life possible to all the world's inhabitants, freeing the poorest from the necessity of sordid drudgery from early childhood to old age, and lengthening the part of life devoted to culture rather than to material production. How far this may really result, however, depends upon ethical qualities, which we will not presume to estimate.

The Treasury Department and Russia.

Secretary Shaw Refuses to Reverse Secretary Gage.

WASHINGTON, D. C., June 10, 1902.—Since Secretary Shaw succeeded Mr. Gage at the head of the Treasury Department a number of communications have been received from prominent manufacturers and exporters whose business has been more or less affected by the decree of the Russian Government increasing the duties on certain iron and steel products in retaliation for the assessment of countervailing duties on Russian sugars, in which the new Secretary is urged to reverse the action of his predecessor as a basis for a settlement of the controversy with the Russian Government. Several of the largest houses exporting machinery of all kinds, machine tools, &c., have joined in this movement, assuming, no doubt, that the Treasury Department, having taken the initiative in the matter, has it in its power to withdraw the ruling on which the retaliatory action of Russia was based. Secretary Shaw has made a very careful investigation of the facts in connection with the original ruling and of the present status of the controversy in the light of existing law, and has found himself obliged to reply adversely to the applications received. The position of the Department, as stated by Secretary Shaw in a letter to a prominent machinery exporting house, is as follows:

"The Department is in receipt of your letter with inclosures suggesting a rescission of circular No. 10 of February 14, 1901, declaring the net amount of the bounties granted or bestowed by Russia on the export of sugars. In reply I have to inform you that the existence of the bounty in question has been affirmatively settled by three tribunals of this Government—to wit, the Board of United States General Appraisers, the United States Circuit Court and the United States Circuit Court of Appeals—and also by two international conferences held in the city of Brussels, respectively in the years 1898 and 1902, with a view to securing the abolition of the bounties on sugar, and under the convention concluded at Brussels on March 5, 1902, 'the high contracting parties agree to impose a special duty on the importation into their respective territories of sugars from countries that grant bounties either on production or export. The duties shall not be less than the amount of the bounties, direct or indirect, granted in the country of origin. The high contracting parties reserve to themselves, as far as each of them is concerned, the option to prohibit the importation of bountied sugars.'

"The Secretary of the Treasury has no discretion in this matter, for the reason that, the existence of the bounty having been conclusively established, he could not disregard the mandatory provisions of section 5 of the act of July 24, 1897, requiring such bounty to be ascertained and declared and countervailing duty assessed in an amount equal thereto.

"The decision of the Circuit Court of Appeals is binding on the Secretary of the Treasury; but even were it not, the provisions of section 2 of the act of March 3, 1875, would not permit the revocation of the circular in question except in concurrence with an opinion of the Attorney-General recommending the same; and it is extremely doubtful, if not altogether improbable, that the Attorney-General would enter upon this question, and particularly so at the present time, inasmuch as it is now pending before the Supreme Court of the United States on a writ of certiorari issued at the instance of the importers. In the absence of a decision adverse to the Government, a contingency which the Department has no reason to anticipate in view of the well-known facts, this whole question is now entirely outside of and beyond the jurisdiction of the Treasury Department.

"I may state for your information that the retaliatory action of the Russian Government, as this Department is advised, was based upon an administrative conclusion that the assessment of countervailing duty under section 5 constituted a discrimination against Russian sugars; whereas the fact is that the existence of the Russian bounty having been affirmatively established,

the Secretary of the Treasury would have most unjustly discriminated against all other bounty paying countries had he failed to declare the bounty and assessed countervailing duty on Russian sugars. But even in this phase of the question the matter is not one for the Treasury Department, and, therefore, the suggestion has been made to the Secretary of State for his consideration whether the action of the Russian Government is not in violation of its treaty obligations with this country as outlined in the treaty of 1832.

"I have endeavored to answer your letter in such a manner as to make clear to you the exact situation as it exists and to correct the very general though erroneous impression that, the law and the facts to the contrary notwithstanding, the Secretary of the Treasury has discretionary power to alleviate a condition occasioned by an utter, although perhaps unwitting, misconception. In this country, when importers feel themselves aggrieved by the action of customs officers in the assessment and collection of duties, the courts are open to them for the redress of injuries sustained. The Treasury Department is not aware that similar privileges are not accorded Russian importers."

The closing paragraph of the Secretary's letter refers to the right which it is understood Russian importers of American machinery affected by the decree have to appeal from the assessment made under the decree, on the ground, first, that the assessment of countervailing duties on Russian sugars was not a "discrimination against Russian commerce" within the meaning of the law invoked by the Russian Minister in issuing the decree, for the reason that similar duties are levied against the products of several other nations, and, second, because the decree is in direct violation of article 6 of the treaty of 1832 between Russia and the United States, which provides that "no higher or other duties shall be imposed on the importation into the United States of any article the produce or manufacture of Russia, and no higher or other duties shall be imposed on the importation into the Empire of Russia of any article the produce or manufacture of the United States than are or shall be payable on the like article being the produce or manufacture of any other foreign country." As Russia levies increased duties only on American products while the United States levies countervailing duties on products of numerous countries, the Treasury officials believe that Russian importers have a strong case against the decree in force.

W. L. C.

Conference of Canadian Boards of Trade.

TORONTO, June 7, 1902.—Delegates from the boards of trade of the cities and leading towns of the Dominion met here on Wednesday morning and spent three days in the discussion of questions of national, not to say imperial, concern. This commercial congress was called by the Toronto Board of Trade, which issued invitations to all the other boards to send representatives and resolutions expressing local business opinion upon broad Canadian questions. The object was to bring out and express the collective sense of the mercantile associations of the country upon such matters as might be brought up at the coming imperial conference in London. In that conference, which is to be held before the Colonial Premiers return from the coronation proceedings, Canada will be represented by Sir Wilfrid Laurier and one or more other Ministers, and it was to inform these as to the business sentiment of the country on specific questions that the congress was held. On the subject of preferential trade the following resolution was passed:

Whereas, The Imperial Government has changed its fiscal policy by imposing a duty upon certain imports;

Whereas, In the resolution adopted by the London Congress of Chambers of Commerce of the Empire, held in June, 1900, it was stated that an advantageous commercial bond is one of the strongest links in the national unity, and that the maintenance and strengthening of trade is the keystone of a nation's successful development;

Whereas, It is the opinion of this Conference of Boards of Trade of the Dominion that it is imperative in the interests of the empire that some practical steps should be taken toward consummating such an arrangement;

Whereas, The British colonies are admittedly rich in natural

resources, possessing as they do vast areas of arable and mineral lands as yet undeveloped, and those colonies are even now producing, in rapidly increasing quantities, grain, flour, cheese, butter, live stock, as well as the yield of the fisheries, forests and mines, all of which are continually required by the British consumer;

Resolved, That this conference is of opinion that Great Britain can serve best the interests of the empire by giving the products of her colonies a preference in her markets as against the products of foreign countries, it being believed that such preference would stimulate trade and develop colonial enterprises, and, moreover, serve to make the colonies attractive not only to the large number of British subjects emigrating annually from the British Isles, but also to the surplus population of other countries, and at the same time benefit Great Britain by largely freeing her from dependence upon foreign countries for her food supplies.

Resolved, That the Prime Minister of Canada be requested to urge at the Imperial conference the securing of a royal commission, composed of representatives from Great Britain and the colonies, to investigate conditions and to suggest such preferential treatment of imports from the various parts of the empire as shall be best calculated to insure the fullest benefits.

Tariff retaliation appears to be provided for in the following resolution adopted in the place of one that more expressly aimed at Germany, which country imposes its maximum rates on Canadian grains:

That the Dominion Government is hereby respectfully urged to make such alterations in the tariff upon imports from foreign countries not having reciprocal trade relations with this country as will secure the protection of the natural products and manufactures of Canada, and as will stimulate trade and thereby bring about closer trade relations between Canada and such foreign countries.

Resolutions were passed for the reduction of the postage rate on newspapers circulating between Canada and the United Kingdom; for the removal of the British embargo on Canadian cattle; in favor of State owned cables joining the parts of the British Empire; for a depot to exhibit Canadian goods in London; for a subsidized fast Atlantic service; for a subsidized steamship line between Canada and the Cape and Australia, and for a Pacific line; for the appointment of Canadian agents and their accrediting to foreign Governments; for measures of defense.

The banquet to the delegates on Thursday night was a success. Two members of the Dominion Cabinet—Hon. Mr. Tarte and Hon. Mr. Mulock—and the Ontario Premier, Hon. Mr. Ross, made speeches. Important announcements were made by the Dominion Ministers, Mr. Tarte stating that a fast Atlantic line would be afloat in the near future, and Mr. Mulock stating that a line would be subsidized to run from Canadian ports by way of the Cape to ports in Australia. Mr. Tarte further declared himself in favor of increasing the customs duties to any degree deemed necessary for the protection of home industries.

C. A. C. J.

Duty on Charcoal Bar Iron.

The United States Attorney for the Southern District of New York has reported to the Treasury Department that the suits of Wheelock, Lovejoy & Co. vs. United States, and A. Milne & Co. vs. United States, were recently decided in the United States Circuit Court for that district adversely to the Government. The merchandise involved in the suit consisted of certain bar iron, which was returned by the appraiser as "charcoal bar iron." Duty was assessed under paragraph 123 of the act of July 24, 1897. The importers protested, claiming the merchandise to be dutiable as "iron bars in the manufacture of which charcoal had been used as fuel," under the last proviso in paragraph 124, which claim has been sustained by the United States Circuit Court in this case, thereby reversing the decision of the Board of General Appraisers (G. A. 4834) of January 2, 1901 (T. D. 22,708), wherein it was held that the closing proviso in paragraph 124 must be confined to that paragraph, and cannot be extended to paragraph 123.

In passing upon this question the court ruled that the two paragraphs, 123 and 124, must be read as one for the purpose of construction, and the fact that the number 124 has, for convenience of reference, been placed before the words, "round iron in coils or rods," does not limit the proviso to those words and the words which follow them. The Attorney-General advises the Department that no further proceedings will be directed in these cases.

Notes from Great Britain.

The British Admiralty and Water Tube Boilers.

LONDON, May 31, 1902.—As I have all along anticipated, the British Admiralty has not foresworn water tube boilers. It is true the Belleville has been excluded, but the principle of the water tube is still actively supported by the Admiralty authorities. This is abundantly evident from the contracts which have been issued this week, where the following types of boilers for the six first-class cruisers of the 1901-1902 programme are thus specified:

"Devonshire" (Chatham Dockyard), a combination of four-fifths Niclausse and one-fifth cylindrical boilers; "Hampshire" (Sir W. G. Armstrong, Whitworth & Co.), four-fifths Yarrow and one-fifth cylindrical; "Carnarvon" (Beardmore & Co.), four-fifths Niclausse and one-fifth cylindrical; "Roxburgh" (the London & Glasgow Shipbuilding Company), four-fifths Durr and one-fifth cylindrical; "Argyll" (the Greenock Foundry Company), four-fifths Babcock & Wilcox and one-fifth cylindrical; "Antrim" (J. Brown & Co.), four-fifths Yarrow and one-fifth cylindrical.

North of England Iron Trade.

The ascertainment by the accountant of production and prices of manufactured iron in the north of England and Cleveland district was received by the secretaries of the Board of Conciliation and Arbitration at Middlesbrough and Darlington this week. The production for March and April, the period covered by the return, was 13,897 tons, comprising rails, plates, bars and angles, the net average price of the whole being £6 3s. 9d. There has been a reduction of 1 shilling 5 pence for March and April, making 4 shillings 11 pence in four months this year, but in the last 18 months there has been a decline of £2 2s. 2d. Although there is a decline in the net average prices, the tendency of the market just now is upward, plates and angles having been put up a little while since, while bars have this week risen 5 shillings per ton. Ironworkers' wages, which are ruled by a sliding scale, have kept pace in the downward movement in the general course of trade. There is no reduction in this return by the sliding scale, but there was a decline given of 2½ per cent. in the first two months of the year, which, added to the reductions of last year, made 20 per cent. The full advance in the brisk period was 30 per cent., so that there is still a considerable margin to the good.

The Gellivara Mines.

The *Echo des Mines et de Metallurgie* states that the Swedish Government has resolved to retain the rich mines of iron ore at Gellivara, which are now recognized to be one of the largest deposits of the mineral in Europe. The reason assigned is that the Swedish Government desire to prevent the United States Steel Corporation from purchasing. I am in a position to state that this report is not true. The Government had an option upon the property pending the recent session of the Swedish Parliament. As the Parliament rose a week ago without enforcing its option, the Gellivara ore fields are now in the hands of private exploiters. Interesting developments may be expected during the next two months.

A New Move by Germany.

That our German competitors are fully alive to the importance of capturing trade in British dominions is evidenced by two new developments worth recording. A school is to be established for German students who are intended for a commercial career in India, and these will be drafted direct from their German school to the Indian training centers, and there receive a specific commercial training. Negotiations, likewise, have been entered into with a number of Boer refugees in Germany with the object of enlisting them in the education of commercial students in the Taal, the Boer patois of South Africa. I have repeatedly drawn the attention of contractors and others in *The Iron Age* to the growing importance of the Indian trade. The Germans have been sending out deputations to the far East, have been studying reports and pushing their interests in that direction whenever or wherever possible. I venture once

again to assert that no matter how busy Americans may be supplying their home demand, the time will come, and perhaps sooner than they expect, when the Indian trade must prove of real value. The sooner the machinery is set in motion for bringing American commerce into direct relation with India and the far East, the better it will be.

The British Metal Market.

Opinions as to the future of the British metal market are curiously diverse. Optimism and pessimism are both observable. There have undoubtedly been extensive purchases of raw material, which have given rise to a hopeful feeling. This is probably due to the prospects of immediate peace and the anticipation that, in the event of the negotiations ending satisfactorily, there will be heavy shipments to South Africa. On the other hand, it must be remembered that this possibility has been largely discounted by purchases already made, but which are not yet filled. For example, enormous purchases have been made of galvanized goods of one sort and another, and the galvanized manufacturers are busy upon orders already entered upon their books.

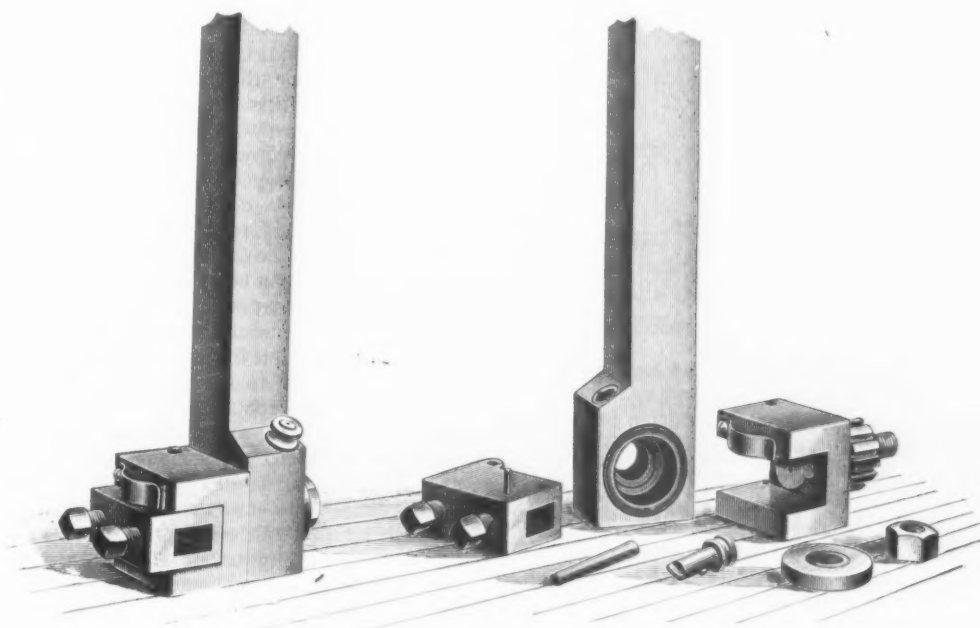
Business men express the opinion that immediately

shillings 9 pence; part mine, 53 to 55 shillings; all mine, 57 shillings 6 pence to 62 shillings 6 pence; best ditto, 77 shillings 6 pence to 80 shillings; cold blast, 95 to 100 shillings; Northamptonshire, 51 shillings to 52 shillings 6 pence; Derbyshire, 52 to 53 shillings; Lincolnshire, 53 shillings 7 pence; North Staffordshire, 53 to 54 shillings. Finished iron: Marked bars, £8 10s.; Earl of Dudley's brand, £9 2s. 6d.; second grade, £7 10s.; common unmarked bars, £6 7s. 6d. to £6 10s.; North Staffordshire bars, £6 10s. to £6 15s.; angles, £7 5s. to £7 10s.; sheets, singles, £7 15s. to £7 17s. 6d.; doubles, £7 17s. 6d. to £8; trebles, £8 10s. to £8 12s. 6d.; galvanized corrugated sheets, f.o.b. Liverpool, £11 10s. to £11 15s.; hoop iron, £7 5s. to £7 10s.; nail rod and rivet iron, £7 5s. to £7 10s.; gas strip, £6 15s. to £6 17s. 6d. Steel: Bessemer billets, £5 to £5 2s. 6d.; best Siemens billets, £5 5s. to £5 7s. 6d.; mild steel bars, £6 10s. to £7; steel plates, £6 10s. to £7 10s.; steel girders, £6 to £6 5s.; steel angles, £5 15s. to £6 5s.

S. G. H.

The Whalen Planer Tool.

The accompanying cut represents a new combination planer tool which is being put on the market by the



THE WHALEN PLANER TOOL.

peace is proclaimed there will undoubtedly be a great tide of prosperity in South Africa, and it is also argued that, with an enormous increase in the output of gold, business throughout the world will be excited, and we may therefore expect a continuance of the trade boom which has been so marked a feature during the last four or five years. I sometimes am inclined to think that we are not now suffering so much from the want of money as the want of brains, efficiency and a clear conception of what are likely to be the future wants of the consumers in all parts of the world. Even if we have enormous quantities of gold at our disposal, unless we know how to utilize the bullion to the best advantage, we would probably be better without it.

However, from Cape Colony and Natal good orders are being received for smiths' iron, cart axles, railway material, and other lines of goods consumed in those districts. The influence is being felt on the price of raw material, and there is undoubtedly a slight improvement in the prices of unmarked bars. For some of the commonest qualities £6 7s. 6d. is still quoted, but other makers are demanding £6 10s., and for better qualities £6 15s. to £7. The best trade at present is being done in these better qualities. Pig iron remains *in statu quo*, with if anything a slightly firmer tendency. The following are the standard quotations in the Midlands of England, and may be taken as a fair representative of the price of metal goods in all parts:

Pig iron: Forge qualities, Staffordshire cinder, 48

Cincinnati Planer Company of Cincinnati. The tool is formed with an apron and tool block and is provided with a turret movement that works in the end of the shank. It will cut in any position desired, across a surface, down the sides, and do right or left undercutting. In order to set the turret, the nut in the rear is loosened and the thumb nut at the side screwed down. The latter operation withdraws the locking pin, leaving the turret free to be set in any position. The main object of the tool is to do away with the lifting or dragging of large and heavy tools on the return stroke when planing side work or undercutting. It is particularly useful for planing slots in the sides of a piece where a side head cannot be used to good advantage.

It is reported that the Republic Iron & Steel Company are negotiating for the purchase of the Russia mill of the American Sheet Steel Company at Niles, Ohio, which has been idle for several years. The plant contains two sheet mills, a muck train and 23 puddling furnaces.

One of the largest single orders ever given out for locomotives has been placed by the Baltimore & Ohio Railroad with the American Locomotive Company. The order requires the speedy delivery of 75 consolidated freight engines, ten high class passenger locomotives and 15 switching engines.

The Eight-Hour Bill in the Senate.

Hearings Begin Before the Committee.

WASHINGTON, D. C., June 10, 1902.—The hearings on the Eight-hour bill before the Senate Committee on Education and Labor began last week under conditions of the highest significance to manufacturers in all parts of the country. At the opening session Chairman McComas announced that the bill will certainly be reported, either favorably or adversely, in time for action during the present session of Congress, but he intimated that should an adjournment be taken within the next four weeks, as now seems likely, the committee will not have time to make a report at the present session. Another interesting development of the first meeting was an emphatic declaration made by Judge McCammon on behalf of the Carnegie and Bethlehem steel companies, the Cramp Shipbuilding Company, &c., and Judge Payson, representing the Newport News Shipbuilding & Dry Dock Company, the Stirling Boiler Company, Bath Iron Works, &c., that these companies, in the event of the passage of the pending bill, will all withdraw absolutely from all forms of contract work for the Federal Government. Additional interest was given to the first meeting of the Senate committee by the fact that a delegation representing the National Association of Manufacturers appeared in opposition to the bill in accordance with a resolution adopted at the Indianapolis convention of the association, as reported in *The Iron Age*.

Those in attendance upon the first meeting of the Senate committee in addition to Messrs. McCammon and Payson were ex-Senator Anthony Higgins, representing the Harlan & Hollingsworth Company; Daniel A. Tompkins, A. B. Farquhar and Charles M. Jarvis, representing the National Manufacturers' Association, and Samuel Gompers and A. Furuseth of the American Federation of Labor.

Mr. Gompers was asked to take the lead in discussing the bill, to which he demurred and urged that the evidence given before the House committee be accepted in lieu of additional arguments, but Chairman McComas promptly declined to accept this suggestion, and insisted that the committee "would be derelict in the opinion of all if we should go to the Senate and say that we had heard that some other people had had this bill before them and considered it and decided what they ought to do, and therefore we felt we could neglect our duty and make no inquiry about this bill." Mr. Gompers then stated that he was not prepared to proceed until the next meeting of the committee, whereupon Judge McCammon took occasion to state that he would be prepared to reply after Mr. Gompers had concluded. Incidentally, however, he said that he would speak for many unorganized laboring men as well as for the manufacturers.

Judge McCammon Opposes the Bill.

"The laboring men," said he, "will be more injured than the manufacturer by the passage of this bill. The manufacturer can protect himself by refusing to undertake Government business, as most of the manufacturers will if this bill becomes a law. I say 'most;' I mean the large ones, the ones I represent, and some others of which I have heard. Of course, there are a very large number of smaller manufacturers, whose business it is to manufacture small articles for the use of the Government, who will go on (I am premising that this bill becomes a law) and undertake to work for the Government under its provisions. It is the laboring man in such an establishment who will suffer, simply because his individuality is destroyed. His right to labor more than eight hours, his right to accumulate, is taken away from him. In other words, he will be a victim of a despotism of law that says to him, 'You shall not labor one single minute or second beyond eight hours during the day.'"

At this point Senator Harris of Kansas asked whether the bill would prevent an employee from working eight hours on Government work and an hour or two on private work for the same employer on the same day,

upon which Judge Payson insisted that the question should be answered by Mr. Gompers, who, after several evasive replies, said:

"We are the advocates of an eight-hour day, and the limitation of a day's work to eight hours by consent with our employer in all cases where that can be done. Where Government work enters into the operations of a plant, either in part or in whole, we expect that eight hours shall constitute a day's work by law and the limitation of a day's work."

Government Contracts to Be Used as a Club.

Senator Harris then called attention to the fact that according to its title the bill is "An act limiting hours of daily service of laborers and mechanics employed upon work done for the United States," and suggested that such title would not cover the scope of the bill as construed by Mr. Gompers. He then asked Judge Payson to give his opinion as to whether employees working eight hours on Government work might, under the bill, work overtime on private work, to which the Judge replied:

"It is the intention of those who favor this bill (and they will be frank enough to avow it) to use the club of a Government contract to compel an eight-hour day in every industrial establishment in this country where Government contract is used for any purpose. This is the intention and that is the construction which has been placed upon that language for the last six years. Now the question is whether or not the language is susceptible of that construction. That language means, in my judgment, that wherever a portion of a day is occupied by an employee of a contractor having so-called Government work, no more than eight hours' work can be exacted by that contractor from that man upon any work. This bill goes further than has ever been intimated here. It has been time and again avowed by gentlemen representing organized labor—I refer to Mr. Gompers and those associated with him—that the object of this legislation, the intent and purpose of having it enacted into law, is to bring an eight-hour day in private employment as such. If I could make it any stronger than that I would be very glad to do so, and I think Mr. Gompers would be glad to have me, because that is his avowed purpose. It has been expressed time and time again. That is to say, Congress is to be asked to do indirectly by this bill what if it were to attempt to do directly by an enactment without any subterfuges as to words or sentences would not receive consideration for one minute."

Referring to a statement made by Mr. Gompers to the effect that the bill would be very beneficial and would work no injurious results, Judge Payson asserted with much warmth that the manufacturers whom he represented and hundreds of other firms in similar lines of industry would be affected not only injuriously, but in many instances absolutely disastrously. The House of Representatives, he said, had never given any attention to the measure, for while it had passed the House on two occasions, "in both instances it passed under a motion to suspend the rules, and in neither instance was there a word of discussion upon either side, and in the present Congress not ten men in the House voted upon it one way or the other." Referring especially to the effect of the bill upon the interests which he represented, Judge Payson made the following interesting statement:

Important Establishments May Refuse Government Work.

"I wish to say that the amount of work done for the Government in practically every one of the different industrial establishments which would be affected by this bill is so small, relatively, that if required to attempt to reduce everything to an eight-hour day (which they would not do and could not do, for reasons which we shall show later) we would be driven to the alternative of giving up Government work. I do not say this as a matter of threat or anything of that kind, and it will not be so understood, but I am simply stating what the situation is as the men believe who have charge of these enterprises.

"I am authorized to say to this committee, after an interview this morning with the president of our com-

pany, who is now in the city, as the result of a meeting of his directors on Saturday last in New York, that if this bill should become a law the Newport News Shipbuilding & Dry Dock Company would be compelled to give up undertaking to do Government work. We do no small amount of work at our plant. We have already built and delivered the 'Kearsarge,' the 'Kentucky' and the 'Illinois.' We have now on the stocks the 'Virginia,' the 'West Virginia,' the 'Maryland,' the 'Charleston' and two or three smaller craft that I am not able to name—in short, a large amount of Government work. But, on the other hand, the amount of merchant work and merchant repairing that we do is such that in view of the fact, as I have told you, that it would be a practical impossibility to undertake to keep the two systems running side by side, I am authorized by the president of the company to say that it was the conclusion of the Board of Directors, at their meeting on last Saturday, that if this bill should become a law we should have to give up undertaking Government work. They authorized me to say that at the next meeting of the committee as coming directly from them. And this is also true of other establishments, as we shall show to you, not only by the testimony already given, but by additional testimony."

Position of the National Association of Manufacturers.

Daniel A. Tompkins, the spokesman of the committee of the National Manufacturers' Association, stated that the association, in passing resolutions against the bill, had acted upon the measure as they found it, but that it would be the purpose of his committee to investigate its probable operation, and for that purpose he would attend the hearings.

"We desire to express to you," said he, "the apprehension of the manufacturers in their convention that the effect of the bill as it now stands, if it should be passed, would be very injurious, not only to the manufacturing interests and the commercial interests, but also to a great deal of labor. We do not believe it possible to have a condition in which labor is equally controlled in every part of the United States. We believe, for instance, that the advantages of New England, where capital is abundant, where skill has been accumulating for years in manufacturing pursuits, and where educational systems have been pushed to a degree of perfection that is rare in other parts of the United States, must be offset in new communities and in sections of country not so much developed in that respect by a difference in the hours of labor. We believe that the means of bringing about an equalization and a betterment of the conditions are very much like those of getting shade trees—you have to give them time to come by natural conditions. These results will have to be attained by practically the same means by which this Republic was founded—by getting away from the influence of too much legislation in Europe, of sumptuary legislation, and of other influences that constrained and forbade natural development, instead of attempts at legislative development.

"This is a case where it seems to us there is too much legislation, and where the object of these gentlemen would be better accomplished if it were left more to natural means. I think most of the manufacturers in the association have the welfare and progress of the working people quite as much at heart as they have themselves. Indeed, most of them are working people who have come absolutely out of the ranks, and have a fellow feeling that gives them an exceedingly strong interest in doing everything possible for the promotion of the welfare of the working people."

Mr. Gompers then attempted to take Mr. Tompkins to task on the ground that the National Association of Manufacturers had prejudged the question by a mere reading of the pending bill. "You first undertook," said he, "to find us guilty and then to find out what we had to say." "Our opinion," replied Mr. Tompkins, "was formed on the basis of exactly what you had written in the bill, and I must say that it has been made worse since I heard you to-day."

The committee then adjourned, with the understanding that the time of the next hearing would be assigned

to Mr. Gompers for the purpose of explaining the necessity and desirability of the proposed legislation.

W. L. C.

Canadian News.

Interest in Ontario Mines.

TORONTO, June 7, 1902.—Numerous inquiries have lately been received at the Ontario Bureau of Mines concerning the mineral resources of the Province. A letter from Louis Straus & Co. of New York asks for information about nickel ore and matte. The firm have had supplies from New Caledonia, but are willing to do business in Ontario. The North American Chemical Company of Bay City, Mich., have sent an inquiry as to the chance of obtaining iron pyrites for use in the manufacture of sulphuric acid. Zinc ore is the subject of another communication by persons desirous of sending shipments of the ore to England. An American company are seeking vanadium ore through the bureau. It is also desired for shipment to England.

New Enterprises.

Parties are negotiating for the establishing in Ottawa of a plant for the manufacture of malleable steel from cast iron. A new process of conversion is to be employed. A leading electrical house in the United States are also said to be arranging for the opening of a branch business in Ottawa to employ 150 hands. It is proposed to set up works to prepare mica for shipment abroad. The Iron & Steel Company of Guelph propose to move their plant to London, Ont. The Buffalo Forge Company, it is said, intend to establish a subsidiary company in Canada, with head offices in Toronto and works in Lincoln County. The business of H. S. Howland, Sons & Co., wholesale hardware merchants and nail manufacturers, Toronto, has been taken over by H. S. Howland, Sons & Co., Limited, capital, \$300,000.

New Coal Land Regulations.

New regulations have been adopted by the Dominion Government for the disposal of coal lands in Manitoba, the Territories and British Columbia. They provide that lands containing anthracite coal may be sold at an upset price of \$20 per acre and coal, other than anthracite, at an upset price of \$10 per acre, or, if the Minister of the Interior so decides, may be sold by public competition. A royalty at the rate of 10 cents per ton of 2000 pounds will be collected on the output of the mine, and the operator must furnish the Government with sworn returns accounting for the full quantity of coal mined. Not more than 320 acres can be sold to one applicant. Payment for the land in cash or scrip is to be made when the application is granted, or payment may be made of one-quarter of the purchase price only, and the balance in three equal annual installments, with interest at the rate of 5 per cent. upon the unpaid balance. Permission may be given to prospect for minerals upon land patented or entered, on which the coal mining rights have been reserved, upon payment of a fee of \$10, and undertaking to recompense the owner or occupant of the soil for damages that may be done to his land.

Minor Notes.

Wood, Vallance & Co., wholesale hardware merchants, Hamilton, Ont., have purchased the stock of a large established hardware firm in Vancouver. The business will be carried on under the name of Wood, Vallance & Leggatt, and Henry Leggatt will have charge.

Additional discoveries have been made of bodies of hematite ore close to the Canadian Northern Railway, near Split Rock Lake.

The Department of Railways and Canals has been notified that the Clergue Company will supply the first consignment of steel rails for the Intercolonial this week.

C. A. C. J.

The Mills Machine Company, Lawrence, Mass., general founders and machinists and manufacturers of and dealers in machinery, desire catalogues from manufacturers of all kinds of machinery.

Steel and Concrete Coal Storage Plant.*

BY FRANKLIN M. BOWMAN.

It is the intention in this paper to describe the coal storage plant of the Lowell Gas Light Company, Lowell, Mass., and we shall also touch on the general construction of such plants.

Previous to the building of the new storage plant old shallow wooden sheds were used, some of which were very antiquated; no modern system of conveying machinery of any kind was used, and the cost of handling coal was quite high. When it became evident to the management of the gas company that large improvements would have to be made in all parts of their plant in order to reduce the cost of manufacture and to increase the output, they were at first inclined to allow the storage buildings to remain as they were, except that coal handling machinery over the old storage was proposed. Having in mind, however, their probable fu-

quired. It was necessary, however, to locate the building in the position decided on because they could not disturb the present coal sheds and retort house, as it was necessary to run them continuously while the new buildings were being constructed, and, further, the general scheme required the space of the old coal sheds for other improvements.

Description of Building.

In the design of the plant every effort was made to obtain not only a useful and permanent but handsome structure, if a coal storage can be called handsome. It is a steel frame structure with concrete walls, foundations and floor and with a tile roof resting on steel purlins. It is fire proof throughout, well ventilated and lighted, protected as much as possible from corrosive influences and arranged so that the pocket can be expeditiously emptied should there be fire from spontaneous combustion or other causes. The steel truss is braced from the outside of the building with the main columns



View of Interior.

STEEL AND CONCRETE COAL STORAGE PLANT.

ture requirements and considering the limited space they had for remodeling and extending the other parts of their plant, they finally decided to put up a large modern and substantial storage plant, to hold 25,000 tons, about twice the previous capacity.

The coal storage building runs parallel to the Boston & Maine Railroad, the track immediately adjoining the shed being on the gas company's property. This arrangement allows ten cars to be placed on this siding at one time, and with the unloading hopper in the middle of the length of the building one-half of these cars can be loaded, so that unloading and moving of cars can be carried on continuously, without shifting engines. There would have been some advantage in running the building at right angles to the position decided on, as, with one end of the building against the railroad siding, the coal conveyor would have a straight run, so that it would not be subject to the extra wear and tear and require the constant extra power necessary to pass round the turns of the tunnel leading under the unloading hopper. Also under this construction the concrete shafting in the center of the building would not be re-

vertical; with this construction these columns, with the concrete wall, form the bulkheads for the coal; the inclined back leg, forming the brace at each column, is outside of the storage and supports the overhang, as shown in Fig. 2.

A further reason for the use of this construction is that an inclined floor, with a tunnel in the center of the building, was required, and the conditions made it impossible to put in tie rods across the building to unite the bases of the main columns and thus take more of the wind strains and the pressure of the coal against the sides of the building.

The shallow truss with bottom chord parallel to the top chord makes it impossible for the coal to reach the truss at any point, while the channel tie across the center of the truss, near the ridge, forms a support for the conveyor. It may be noted that the building is without a ridge strut, but the two girders on either side of the ridge answer the purpose, and at the same time form a support for the conveyor, as well as a guard for the foot walk. The shallow inclined truss, with the tile glazed roof, together with the concrete walls and floor, give the inside of the building a neat and substantial appearance, while the overhang on the sides, together

* Paper presented at the Boston meeting of the American Society of Mechanical Engineers.

with the tile roof and the octagonal ends, make the exterior appearance pleasing.

The floor and foundations of the structure are made of concrete, the foundations having an inclined back wall slanting away from the building. The building is so designed that the main columns have no horizontal thrust at the base, but the small intermediate columns have the thrust of the coal at their base, thus taking care of the pressure of the coal against the sides of the building.

The roof is covered with Ludowici tile, the finish of the tile being what is known as nonglazed or semiporous. Except for its expense, glazed tile would be satisfactory for this structure, because any sweating and dripping inside of the building would do no harm. Unglazed and semiporous tile is necessary in such buildings as a power house or machine shop, so that there may be none of this dripping. The tile does not, as might be expected, freeze and crack in cold weather from the absorption of water. During a cold spell last

In the case of Lowell, all main columns, and as far as possible the intermediate columns, are entirely covered with concrete. The steel work which is exposed cannot be reached by the coal, can readily be painted and is made throughout of heavy material.

The coal storage pockets of the power houses of both the Manhattan Railway Company and the Metropolitan Street Railway Company of New York are steel structures, and are constructed along the lines indicated in Fig. 2, the steel framework being covered with concrete. The Manhattan Railway Company adopted the Columbian system, which consists of putting in small special beams about 2 feet apart, thus allowing the main beams to be spaced further apart than otherwise. They are thus able to use a less thickness of concrete and effect a saving in weight, cost and space. Another similar and very good construction in use is either expanded metal or wire netting covered with concrete. The essential point is to have the steel framework, and especially the joints, entirely surrounded and imbedded in con-

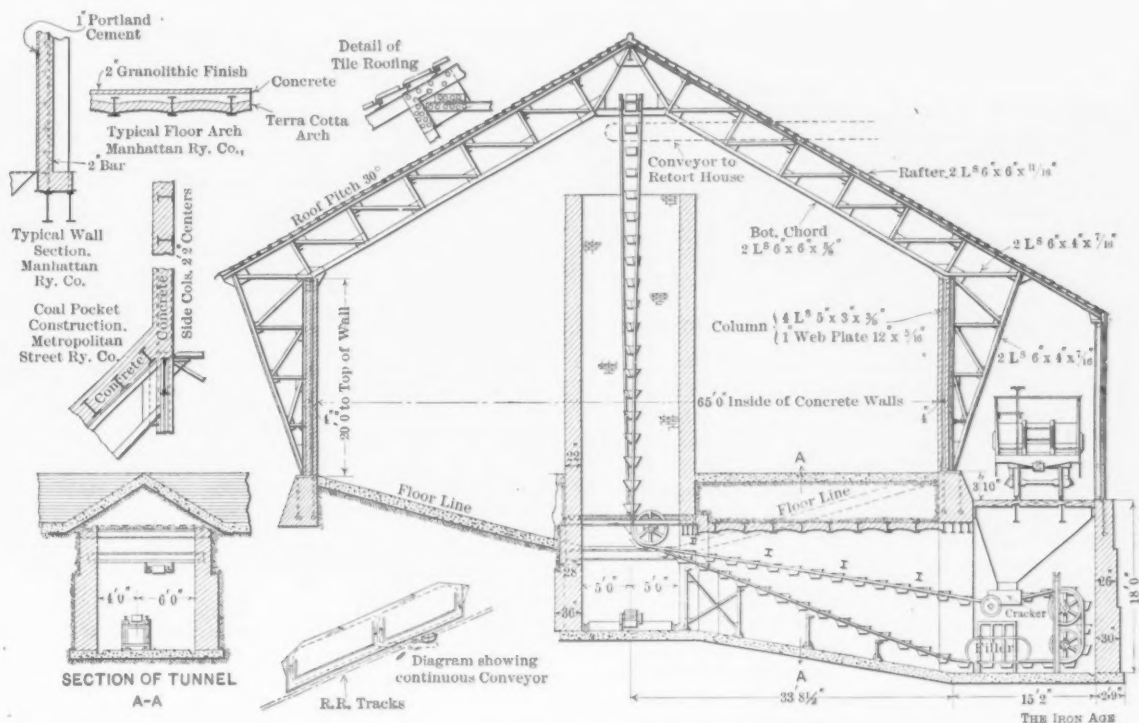


Fig. 2.—Transverse Section and Details of Building.

STEEL AND CONCRETE COAL STORAGE PLANT

winter, lasting almost two weeks, the shed became covered with ice and snow, mostly ice, to an average depth of 4 inches, but the tile has, apparently, not been injured.

Light is obtained principally through skylights in the roof, made of glazed tile of the same form and size as the ordinary tile and laid on the roof in the same manner. Additional light and ample ventilation is obtained from the opening between the roof and the top of the wall.

It is to be noted that the coal in this building is stored on the ground and not in an elevated structure; wherever possible, it would seem that coal should thus be stored, and where this is impractical it is important that the inside of the storage be entirely lined with concrete, so that no part of the supporting steel work is exposed to the corroding action of the coal.

Public attention has recently been called by Mr. Soosmith to the possible danger due to corrosion in tall steel frame office buildings, but danger from this source is largely accentuated in a coal storage, with its sulphur and other corrosive substances. For this reason, where a permanent and costly structure is to be built, as is usual in the case of large power houses, coal bins lined with steel plates should not be used, as they are liable in time to become a menace to life and property.

crete, as under these circumstances steel will not corrode.

On account of the limited space on the property for the coal storage plant it was necessary to keep the building narrow, and consequently coal had to be piled to the considerable depth of 40 feet. It was therefore thought best to design the pocket so that it could be promptly emptied in case of fire from spontaneous combustion or other causes. With this in view the floor was given a pitch of 15 degrees toward the tunnel in the center of the building, so that the two sides can be easily and well drained of coal by the conveyor; that it is so is shown by the photograph of the interior, Fig. 1, which was taken after the shed had been filled and emptied. In order, however, to expedite the removal of coal in case of fire two panels in the sides out of every five were made of removable steel buckle plates with a movable column in the center; these can be unbolted and moved promptly and coal can be taken out of this opening; it is 10 feet wide.

In connection with this matter of spontaneous combustion the upright wrought iron pipes seen in the photograph of the interior are to be noted. These were installed by the superintendent, T. H. Hintze, with a view to determining, approximately, the temperature of the coal by means of a thermometer held at the upper end

of the pipe. In this manner any coal in the storage which shows signs of becoming heated can be conveyed to the retort house and used.

Conveying Machinery.

Reverting to the machinery, the conveyor is of the gravity bucket type, in which the buckets are 18 inches wide by 24 inches long, pivoted in the chain in such a manner that while they maintain themselves normally in an upright position they can turn through a complete revolution. The chain is composed of double flat links of steel, and the conveyor moves about 40 feet per minute.

The driving mechanism is located in the truss and is operated by two 6 x 8 steam engines of nonfreezing type. This mechanism is peculiar, from the fact that instead of sprocket wheels the chain is driven by pawls, thus reducing the wear and imparting a smooth and uniform motion. The machinery receives the coal from the hopper under the railroad tracks, cracks the lumps to a uniform size and carries them without transfer to any part of the building. When the new retort house is completed coal will be taken from any part of the storage and will be delivered to a separate conveyor leading to such retort house. It is to be observed that all the functions of receiving, cracking and rehandling are performed by the conveyor, the receiving section of which can be detached when rehandling coal from storage. The coal is drawn into the conveyor by means of adjustable cast iron valves, which have no sliding surfaces. When the valves are closed the column of coal above does not tend to open them. Before the valve is open the filler, which runs up and down the length of the tunnel, is placed in position under such valve; the coal then passes through the filler to the conveyor.

An Improved Thomson Coal Calorimeter.

At a recent meeting of the British Royal Society W. Rosenhain of Birmingham showed an improved form of Thomson coal calorimeter. In it the combustion of samples of coal takes place in view of the observer, and all the operations are thoroughly under control. A sample of powdered coal— $1\frac{1}{2}$ to 2 grams—is compressed in a mold into a short cylinder and is placed within a large glass tube, the whole being then inserted in a glass sided box containing 2 or 3 liters of water. The coal rests in a tiny porcelain dish no larger than a shilling and a platinum wire, which can be raised to incandescence by an electric current, presses on the coal. By means of flexible connections a current of oxygen can be sent through the tube, passing out at the lower end through a non-return valve, and bubbling up in a multitude of streams through the water. The tube is first filled with oxygen and then the wire is heated. The coal immediately takes fire and burns fiercely, the oxygen meanwhile being forced into the tube and passing, together with the products of combustion, out at the bottom valve. The coal burns away to the last fragment and finally combustion ceases. A valve is then opened, admitting the water to the interior of the tube to completely cool it, and then this water is forced out again into the general mass by a further stream of oxygen. Thus the entire apparatus and the water is brought at the last to one temperature, which can be read on a thermometer. All the mechanical arrangements for controlling the operations are well designed, the object of the foot valve being to prevent regurgitation of the water should the combustion slacken and the gases be cooled by conduction through the sides of the tube. The apparatus had its origin from one used by Prof. Hudson Beare at University College.

The officials of the Republic Iron & Steel Company have practically decided to introduce a policy of co-operation among the employees. The latter will be invited to buy preferred stock of the company under an installment plan now being worked out, and a large number of workmen in the mills, as well as many of the clerical force of the company, have already made application to subscribe for the shares. The preferred stock, which pays 7 per cent., is equal to about $9\frac{1}{2}$ per cent. on the investment, based on present market prices for the stock.

Philadelphia Foundrymen's Association.

The one hundred and nineteenth regular meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club, in that city, Wednesday evening, June 4. President Thomas I. Rankin occupied the chair and among those present may be mentioned:

Thos. I. Rankin, Abram Cox Stove Company, Philadelphia.
 Jas. S. Stirling, Harlan & Hollingsworth, Wilmington, Del.
 P. D. Wanner, Reading Foundry Company, Reading, Pa.
 Thos. Furlow, Furlow Sanitary Brass Mfg. Company, Philadelphia.
 W. O. Steele, Gregor Mfg. Company, Philadelphia.
 Prof. Dr. Alfredo Gorni, Milan, Italy.
 Enrico Vigano, Milan, Italy.
 H. O. Evans, Thos. Devlin & Co., Philadelphia.
 G. H. Judy, Pressed Steel Car Company, McKees Rocks, Pa.
 C. D. Matthews, Camden Iron Works, Camden, N. J.
 Geo. C. Davis, chemist, Philadelphia.
 H. B. Lincoln, Jas. Smith Woolen Machinery Company, Philadelphia.
 Horace E. Setchell, A. & P. Roberts Company, Pencoyd, Pa.
 W. P. Cunningham, A. & P. Roberts Company, Pencoyd, Pa.
 C. C. Hunsberger, A. & P. Roberts Company, Pencoyd, Pa.
 D. M. Kittinger, A. & P. Roberts Company, Pencoyd, Pa.
 Jas. B. Strain, Robt. Wetherill & Co., Chester, Pa.
 Thos. Devlin, Thos. Devlin & Co., Philadelphia.
 F. Sabin, North Wales Foundry, North Wales, Pa.
 F. E. Cook, Westinghouse Air Brake Company, Wilmerding, Pa.
 H. E. Pierce, Girard Iron Works, Philadelphia.
 Geo. A. Messick, Pusey & Jones Company, Wilmington, Del.
 H. L. Haldeman, Pulaski Iron Company, Philadelphia.
 Frank Etting, E. J. Etting Company, Philadelphia.
 F. C. Price, E. J. Etting Company, Philadelphia.
 W. J. W. Moore, Pilling & Crane, Philadelphia.
 J. S. Hibbs, J. W. Paxson Company, Philadelphia.
 Josiah Thompson, J. Thompson & Co., Philadelphia.
 Fred. Stahl, Girard Iron Works, Philadelphia.
 Dr. Edw. Kirk, Philadelphia.
 Geo. Benkert, G. Rebman & Co., Philadelphia.
 Godfrey Lukehart, Cobocksink Brass Foundry, Philadelphia.
 Jas. L. Keightley, Geo. V. Cresson Company, Philadelphia.
 J. Hy. Pepper, Brass Founder and Finisher, Philadelphia.
 A. A. Miller, *The Iron Age*, Philadelphia.
 Oregon J. Ward, Howe Scale Company, Philadelphia.
 Edw. Hitzeroth, C. Hitzeroth, Philadelphia.
 A. G. Warren, J. W. Paxson Company, Philadelphia.
 T. B. Harkins, Harkins Foundry Company, Bristol, Pa.
 Howard Evans, J. W. Paxson Company, Philadelphia.
 D. H. Redmond, Philadelphia.
 Stanley G. Flagg, Jr., S. G. Flagg & Co., Philadelphia.

The reading of the minutes of the previous meeting was dispensed with in the usual manner. The treasurer reported a balance on hand amounting to \$2191.45, with all indebtedness paid.

J. Wesley Pullman, dealer in iron, iron ores, &c., 238 South Third street, Philadelphia, was elected to membership in the association.

The Executive Committee, through P. D. Wanner, announced that the incorporation of the association under the name of the Foundrymen's Association had been effected and the necessary legal documents were handed over to the secretary.

The resignation of Antonio C. Pessano as chairman of the Executive Committee of the association was read. Mr. Pessano leaves the city of Philadelphia for Detroit, Mich., where he will be associated with the Great Lakes Engineering Works. The resignation was accepted and a committee, consisting of J. S. Stirling, P. D. Wanner and Thomas Devlin, was appointed to prepare suitable resolutions. These were presented later in the evening and ordered spread upon the minutes and a copy sent to Mr. Pessano, as follows:

Whereas, We learn with regret of the resignation of Antonio C. Pessano from the chairmanship of the Executive Committee of the Foundrymen's Association, owing to his intended removal from this city, and in token of our appreciation of the services he has so ably rendered during his connection with this association, together with the benefits we have derived from his counsel and advice, as well as the great interest he has always manifested both as an officer and a member, therefore be it

Resolved, That in his removal from our midst to assume duties in other fields we extend to him our very sincere wishes for success, health and happiness, and to the Great Lakes Engineering Works our congratulations on their having secured the services of this man, whom the association so highly appreciates.

The following paper by P. D. Wanner, Reading, Pa., was presented and read:

How Many Hours Shall Constitute a Day's Work?

This is a question that will not down, but comes up again and again, like the ebb and flow, unceasingly. Shall it be eight, nine or ten hours? By a general consensus of opinion ten hours have come to be regarded as an average or commonly accepted day's work in the store, the shop, the mine and on the farm of this country for quite a number of years, but within late years the so-called laboring element, by their leaders, have made a strenuous effort to force the working day down to eight hours, and in order to make the greatest headway possible they applied to the law makers in Congress, the several legislatures of the States and municipalities. Their appeals and threats were generally successful as against these people, who were in a great measure dependent for their positions to this large class of the voting community. With this weapon in their hands, they could and did enforce an eight-hour day for the Government, the State and the municipality. Beyond that, however, they could not go without having a penalty inserted in the act limiting the hours of daily service of laborers and mechanics employed upon work done for the United States, or any Territory, or the District of Columbia. The bill known as the eight-hour law passed the House of Representatives May 20, 1902, and reads as follows:

Be it enacted, etc.: That each and every contract hereafter made to which the United States, any Territory, or the District of Columbia, is a party, and every such contract made for or on behalf of the United States, or any Territory, or said District, which may require or involve the employment of laborers or mechanics, shall contain a provision that no laborer or mechanic doing any work contemplated by the contract, in the employ of the contractor or any subcontractor contracting for any part of said work contemplated, shall be required or permitted to work more than eight hours in any one calendar day, and each and every such contract shall stipulate a penalty for each violation of the provision directed by this act of \$5 for each laborer or mechanic, for each and every calendar day in which he shall labor more than eight hours, and any officer or person designated as inspector of the work to be performed under any such contract or to aid in enforcing the fulfillment thereof shall, upon observation or investigation, report to the proper officer of the United States, or any Territory, or the District of Columbia, all violations of the provisions in this act directed to be made in each and every such contract, and the amount of penalties stipulated in any such contract shall be withheld by the officer or person whose duty it shall be to pay the moneys due under such contract, whether the violation of the provisions of such contract is by the contractor, his agent or employees, or any such subcontractor, his agents or employees. No person on behalf of the United States, or any Territory, or the District of Columbia, shall rebate or remit any penalty imposed under any provision or stipulation herein provided for unless upon a finding which he shall make up and certify, that such penalty was imposed by reason of an error in fact.

This bill now goes to the Senate, where a strong effort will be made by its advocates to have it also passed, and if passed is likely to be signed by the President. It will then be up to the Supreme Court for a decision as to its constitutionality. In the meantime it will have the effect of bringing about a world of trouble and worry to the contractors who may be fortunate or unfortunate enough to secure Government contracts. And should this act even be declared constitutional it would be notoriously unjust and unfair to all others not fortunate enough to get employment within its jurisdiction. There can, however, be no law enacted that will prevent any man from working just as long as he pleases or to have another one work for him as many hours as they may mutually agree upon for a day's work.

A NINE-HOUR DAY DESIRABLE.

I always felt that it was very unjust to make this distinction in favor of some of our people as against the great majority who must labor one hour, two or three longer, much harder and frequently for less pay, to satisfy the advocates or agitators of a shorter day. Neither have I been able to make up my mind that an eight-hour day is of sufficient length. I rather believe, however, that a compromise upon nine hours would be nearer right and more desirable than either the eight or ten hour day. Eight hours, in my opinion, do not seem in the great majority of vocations to be long enough. Our days are divided into two parts, forenoon and afternoon. It strikes me that four and a half hours of work of almost any kind in the forenoon and afternoon would be short enough for all purposes of rest and recre-

ation. I believe that this day would recommend itself generally and would have done so long before this but for the unreasonable eight-hour agitation. The average man is by nature lazy, and would rather not work at all if he could get his necessities and comforts without it; but for work we cannot secure our wants, much less our comforts or pleasures in life by which our existence is worth living. Accumulated wealth, so called, is the surplus product of toil and measures our prosperity and happiness, and just as wealth accumulates the possibilities of prosperity and happiness increase. Therefore it follows that the more work we do or the longer the working day, the more wealth, the greater the prosperity, the higher the wages and the greater the happiness of all our people. The highest wages are paid all the world over where there is the greatest amount of wealth or surplus product of labor, and by lessening that surplus you lessen the possibilities of all the real enjoyments of life.

From this mode of reasoning I do not believe that an eight-hour day is desirable. No! not even to those who advocate it. They are not going to get what they are after—viz., less work and more pay. It is claimed that by the aid of our improved machinery, the general information and intelligence of the people at this time, they can do so much more work in a given time than they could before. That is true, but, on the other hand, see how their wants have increased, desire for pleasure and all the enjoyments of life. It is also claimed, by this same class of agitators for less work and more pay, that the workers are not getting their fair share of profit out of the work they do. That may be so, always was and always will continue to be so as long as human nature remains the same, though this rule has been greatly mitigated by our advanced civilization and reduced almost to a minimum. The talk about the wealth producers, as applied to the so-called working element at this time, is greatly misapplied. I rather believe, and without intending to be unfair to any one, that those who, by their labor and intelligence, with the use of money or so-called capital, build up the numerous and different industrial and commercial enterprises, are the real wealth producers everywhere. It is the lower strata that bears the upper, though it is the privilege of all to get into the upper, but all cannot succeed.

My sympathy has been in favor of the under dog all my lifetime, and will be so to the end, and in the face of the fact that it is the under dog that provokes the fight in nine cases out of every ten. The weak and the needy require our aid and comfort. What is best for them is best for others. If an eight-hour day, for instance, is not the best thing for those who advocate it, it would not be for those who oppose it. Then what would be best? Would it not be a nine-hour day? That, I believe, could be brought about by an almost general concession or consensus of opinion, and if so it should become the general working day, and all laws that have been passed heretofore in conflict should be repealed.

Discussion.

Mr. Stirling, in discussion, said that he thought Mr. Wanner had struck a popular chord—one that was interesting to all foundrymen and difficult to adjust. He related the experience of the company with whom he was connected, particularly since the machinists' strike of last year, and said that conditions had to be met in each case as they existed; this was particularly evident in the comparative case of in and out of door workers. Mr. Stirling said he was fearful that the eight-hour day was coming, and thought the manufacturers would in the meantime pursue a waiting policy and what developed would no doubt be in accordance with the question of supply and demand.

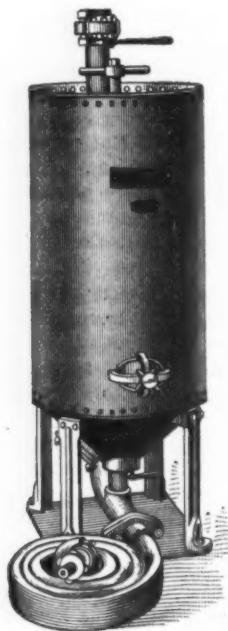
A. G. Warren then presented the following paper, which was illustrated by a number of lantern slides:

The Paxson-Warren Sand Blast System.

The sand blast process has been before the public for more than 30 years, but not until the last ten years has it come into use in the foundry. Although not yet universally used, the merits of the sand blast are fast being recognized, and quite a number of plants have been installed during the past two years. The improve-

ments made in air compressors and the more general use of compressed air, have, in a large measure, been responsible for this. It is not until comparatively recently that there has been on the market an efficient American built sand blast machine. The machine itself should be strongly built, to stand rough usage of unskilled labor. As damp sand will clog up any sand blast, hand holes should be so located that the obstruction can be removed at once without much trouble. I have seen with the use of the double shell sand blast fully an hour required to remove some damp sand. The machine had to be disconnected and hung up by a hoist so that the sand could come out through the top.

With our improved sand blast machine all this trouble is obviated. It has a single shell, no inside hopper,



THE PAXSON-WARREN SAND BLAST SYSTEM.

all parts are accessible through hand holes and all parts liable to wear can be easily replaced. The valve at the top of the machine controls the air supply, the one at the bottom regulating the supply of sand. The sand is fed in through a valved opening in the top head, which is closed when the machine is in operation. To operate, turn on the air and direct the jet of sand and air against the casting to be cleaned. The air serves to give a high velocity to the sand, which does the work. A specially designed helmet is used to protect the face of the operator. The most wear comes on the hose and nozzle. For hose we use a grade specially made for us; it is practically pure Para rubber, and will last, with constant use, from six months to one year. Length of hose may be used up to 50 feet, 12-foot lengths being long enough for most requirements. It has been found that hard iron tips and nozzles give the best satisfaction.

POINTS TO BE CONSIDERED.

An important point not to be overlooked is the quality of sand which should be used in these machines. It should be hard and tough and not too fine, and thoroughly dried and cooled before using, so that it will not steam and clog up the machine. Care should be taken not to overheat the sand, for this will cause it to break up, and a good deal of its efficiency is destroyed. To avoid trouble, it is necessary to have a good air compressor. The idea that because only a low pressure is used any old machine will do is a wrong one. As there are a number of first-class machines on the market, it is not necessary to mention any particular make. The compressor selected should have a confined suction, so that cold air can be supplied to it and thus avoid taking in more moisture than necessary. It is a well-known fact that cold air carries less moisture in suspension than hot air. The receiver should be located near the sand blast in order to trap out any moisture

that may condense in the pipe. Either a belt or steam driven compressor may be used, as best suits the power conditions of the plant where it is installed. Where there is ample engine power available it is best to use a belt driven compressor, because a large engine uses steam more economically than a small steam driven compressor. The best place to locate the air compressor is in or near the engine room, so that the engineer can take care of it. With the proper size of pipe air can be conducted a long distance with very little loss in pressure. The number of cubic feet of free air required per minute will vary according to the opening in the nozzle and the pressure required to do the work. For brass castings 10 pounds pressure is sufficient; on gray iron castings 15 to 20 pounds is generally used; and for steel castings 25 to 30 pounds is required. Experience has proved that a large amount of air at a low pressure will do more work than a small amount at a high pressure.

The sizes of openings in the nozzles commonly used are $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and $\frac{7}{8}$ inch. Many of the compressor catalogues give the amount of air that will be discharged through different sized orifices at certain pressures. As the sand takes up some room, it is obvious that the figures given will be ample for this service.

SPECIAL COMPRESSOR RECOMMENDED.

It quite frequently happens that an establishment having a high pressure air service already installed will consider the advisability of putting in a sand blast plant. One of the first questions arising is whether the high pressure air can be reduced. While this can be done it is not economical. Take, for example, a sand blast for cleaning gray iron castings, using air at 20 pounds pressure, through $\frac{1}{2}$ -inch nozzle, the amount of free air required would be about 120 cubic feet per minute. To compress this amount to 20 pounds requires about 9 horse-power. To compress the same quantity to 80 pounds would take about 23 horse-power. As there is no power or advantage gained by reducing, there would be a loss of about 14 horse-power, and the total loss for a year would amount to nearly the cost of a special compressor for this service.

In the preceding part of this paper the sand blast proper and the compressor for furnishing the blast have been described. As the sand blast makes a large amount of dust it is customary in most cases to have it installed in a room by itself, of sufficient size and conveniently arranged to handle the work. In all cases I would strongly advise using an exhaust fan to take away the dust. The size of fan will vary according to the size of the room; size of sand blast and amount of dust to be exhausted. It is better policy to install a large fan and run it a medium speed than to run a smaller fan at a high speed to do the same work. While the first cost may be a little more, the difference will easily be made up by the horse-power saved. Where it is objectionable to exhaust the dust out doors it becomes necessary to install a washer that sprays the dust as it is drawn through, so that the exhausted air is practically clean. The dust settles to the bottom of the washer as mud, and occasionally has to be shoveled out.

USING SAND OVER AND OVER.

Where the sand blast is used on a large scale it is an advantage to have an arrangement for preparing sand so that it can be used over and over. In this case a hopper is located in the center of the room, or to one side, and covered with a grating. The hopper discharges into an elevator boot, from which the sand is elevated and fed into a revolving screen, where the fine sand is screened out into a dust box and the tailings fall into the sand box, which is above the sand blast. From the sand box the sand is fed back into the sand blast as required. With this scheme the fine sand does not get into the washer or fan, consequently the washer does not have to be cleaned out as often. The belt elevator is a positive device, and when it is properly fed gives good satisfaction. As the conditions in any two plants are never exactly alike it requires considerable thought to get the best arrangement and one that will give the best satisfaction.

For cleaning large amounts of small castings a sand blast tumbling barrel is used to advantage. Capacities

of these barrels vary from 5 to 10 tons per day. The barrel, mounted on rollers, is filled less than half full and caused to revolve very slowly, say three or four revolutions per minute. The sand blast jets are introduced through the ends of the barrel, and as the barrel revolves each casting comes in contact with the blast. The time required to clean one charge varies from 20 to 30 minutes. The advantage of this method is that the castings are thoroughly cleaned and the sharp corners preserved. The barrel itself is covered with a sheet iron casing, which is connected to an exhaust fan and washer, if necessary.

In comparing the sand blast process with other methods of cleaning it is unfair to make comparisons with methods where the castings are only half cleaned. In the bathtub business the sand blast is almost an absolute necessity on account of the labor saved, and because it is the best way to prepare tubs for enameling. On castings to be machined there is a great saving on the tools in the machine shop. The sand blasted casting takes paint better and has a more finished appearance than a casting cleaned in any other way. In most cases, where the sand blast is properly installed, it should pay for itself in two or three years. The sand blast is not confined to the foundry alone, but is extensively used for removing scale and rust from sheet iron and structural work, for cleaning brazed joints and for cutting and cleaning marble and other stones; for cleaning pieces to be galvanized it is of great service, as it does away with the possibility of the acid eating into the metal and impairing its strength.

Discussion.

In the course of discussion the question as to the best place to take air from the tank was asked, and Mr. Warren thought the best effect was obtained in taking it from the top, but on account of moisture it was advisable to run an extra pipe to near the bottom of the tank, where the moisture could be held in a cup like arrangement. Some prefer to allow the air to enter the tank at a tangent, causing the flow of air to strike the sides of the tank, and the moisture then runs down the sides.

At the close of the discussion a motion to adjourn until the first Wednesday in September was passed, and those present proceeded to the roof garden of the club, where the usual luncheon was served.

Large Foundry Proposed at Chester.

The Howery Mfg. Company, with a capitalization of \$200,000, have been organized at Chester, Pa. The new company are composed of local people, and the Delaware County Trust, Safe Deposit & Title Insurance Company are the fiscal agents. The entire amount of stock has nearly been subscribed for, and the little that is left is expected to be taken up within a few days. The officers of the company are: President, J. D. Howery; secretary, T. Burd Zell, United States Naval Inspector; treasurer, William H. Berry. Among the local stockholders are J. D. Howery, William H. Berry, Thomas Ferguson, J. L. Hawthorne and W. L. Matthews of Media. J. D. Howery, who is widely known in the iron and steel business, is also superintendent of the Gruson Iron Works, at Eddystone.

The work of erecting a plant will be started immediately, and the machinery will be partly purchased this week. The main building will be 544 feet long by 106 feet in width. It will be of brick, steel construction and slate roof. The power house will also be of brick, and the second story will be used for a pattern shop. The office building will be of Port Deposit granite, and the first floor will be used for office purposes only, while the second floor will be used for drafting. The entire plant is expected to be completed in about six months. The main shop will be equipped with two 50-ton electric cranes, and the entire plant will be electrically operated. There will be two air furnaces, one of 20 tons and the other of 40 tons capacity, and an 84-inch cupola. A 12-foot planer and a 20-foot boring mill will be installed. This equipment will give the plant the ability

to make heavier and larger castings than any other plant in that section of the country.

President Howery will as soon as possible add a steel department and institute a plan of drying cores by the waste heat from the furnaces, and by this method expects to save \$1.50 per ton on the finished product. The works will at first employ about 250 men.

Quebec's Mineral Production.

TORONTO, June 6, 1902.—The Department of Lands, Mines and Fisheries of the Province of Quebec has just issued the annual report of J. Obalski, M.E., Inspector of Mines. It covers the last calendar year. Mr. Obalski states that the blast furnaces at Radnor and Drummondville were in operation a part of the year, that 15,376 net tons of iron ore were smelted, that 1981 tons of lime and 869,290 bushels of charcoal were used, and that 6875 tons of pig iron, worth \$137,510, were produced. At Drummondville only one furnace was in blast for six months, using bog ore, chiefly from the counties of Nicolet and Drummond. At Radnor the furnace—which had been in operation 14 months, with an average daily output of about 30 tons—was shut down on November 1 for repairs, which were to take two months to execute. The ore used there is the bog variety from the Lake à la Tortue district and from Gentilly. The company are also trying iron ore from other parts of Canada and even from the United States. Within the last two years the company have perfected the use of ochre as an ore and as an agglomerating matter for the other ores. A mixture of ochre and magnetic iron sand molded and pressed by means of a special machine into small cylindrical bricks, about a pound in weight, is used, these bricks forming about 15 per cent. of the composition of the charge.

Of the Leeds mine Mr. Obalski reports the results of an examination made last autumn. In the part prospected he found four veins from 3 to 12 feet thick, with important indications toward the east, the whole covering a section of about 1000 feet. The outcrops may be followed from point to point for nearly a mile. The mine is 10 miles from the Grand Trunk Railway station at Ste. Julie. According to analysis by the Geological Survey, the ore in its pure state contains about 67 per cent. of metallic iron, 0.2 per cent. of phosphorus, 0.03 per cent. of sulphur and no titanium. "The mine," says Mr. Obalski, "contains large quantities of good grade magnetic iron ore, with few objectionable elements, which might be worked if there was a railway in proximity. It is, however, intended to have a line running through this region between the Quebec Central Railway and the Grand Trunk Railway, which might be made to pass near this mine."

Iron Sands.

Nothing was done during the year with the magnetic sands of the North Shore, but there have been several important transactions with the Government and with private parties. One company, the Natashquan Iron Company, have been formed to develop the deposits of that region. It is probable, Mr. Obalski says, that the difficulties met with in utilizing these sands will be shortly overcome and that an important industry will be established on the North Shore. During the summer Mr. Obalski visited the sands on both sides and at the mouth of the Moisie River. He found the Moisie magnetic sand to extend over 9 miles, being particularly abundant on half of that distance and apparently workable on 6 miles, with July Point as the center. He refers to an estimate made a few years ago placing the quantity of 70 per cent. magnetic sand in sight along the front of lots 6, 7 and 8 for a depth of 1200 feet at more than 1,500,000 tons. The sands occur in beds from 5 inches thick to 6 feet. "The question of the utilization of these sands is the same as all the others on the North Shore. Shipments could be made on the eastern part of the Bay of Seven Islands, which is a dozen miles from July Point." Mention is made of the lot on which were erected in 1866 the celebrated Moisie forges, which treated the iron sand in open furnaces. Nothing remains of the furnaces except the traces of their operation in the form of scoria and other *débris*.

Several concentrating machines have been invented for the utilization of the sands. Two or three of these have been examined by Mr. Obalski. He says the Waterhill separator, tested at McGill University, did not give satisfactory results because of irregular magnetization and distribution, but he thinks the principle might be applied with some changes in construction. The Tornado magnetic separator he describes as very simple and based on a good principle. It promises to be a satisfactory apparatus. So does the Crean machine, which was tested at Montreal. There are several other patents more or less practical, "but the end to be sought and which has not yet been attained, is to purify the wet ore, which will obviate drying and expensive handling." He adds that it may be claimed that the problem of purifying the magnetic sands is solved.

Total Mineral Production.

His summary statement of the mineral output of Quebec in 1901 is as follows:

	Value.
Magnetic iron ore.....	\$2,000
Bob iron ore.....	28,978
Chrome iron.....	16,744
Copper ore.....	126,500
Galena.....	9,277
Asbestos.....	1,274,315
Asbestic.....	10,114
Mica (thumb trimmed).....	36,000
Mica (raw).....	3,600
Ochre (calcined).....	14,595
Graphite (prepared).....	3,100
Graphite (raw).....	1,590
Feldspar.....	1,271
Sulphate of baryta.....	2,975
Phosphate.....	6,280
Gold.....	1,140
Slate.....	12,252
Flagstones.....	2,700
Cement.....	28,000
Granite.....	146,000
Total.....	\$1,727,731

C. A. C. J.

Iron and Steel Manufacture in Australia.

The Payment of Bonuses.

A bill for an act relating to the encouragement of manufactures was circulated by the Minister for Trade and Customs in the House of Representatives on May 1, and was read a first time. The schedule provides for the payment of the following bonuses:

"Class 1. Pig iron made from Australian ore, 12 shillings per ton; puddled bar iron made from Australian pig iron, 12 shillings per ton; steel made from Australian pig iron, 12 shillings per ton; amounting to £250,000, to expire on July 1, 1907.

"Class 2. Spelter made from Australian ore, for the first 10,000 tons, £2 per ton, amounting to £20,000, to expire July 1, 1905.

"Class 3. Galvanized iron, 10 per cent. on value; wire netting, 10 per cent. on value; iron and steel tubes or pipes (except riveted or cast), not more than 6 inches internal diameter, 10 per cent. on value; amounting to £50,000, to expire on July 1, 1905.

"Class 4. Reapers and binders, the first 500, £8 each, amounting to £4000, to expire January 1, 1904."

It will be curious to watch developments in regard to this bill in the two houses. The labor party are expected to stonewall it, on the grounds that if these sums are to be spent in developing the industry, the Federation should make it a Government monopoly and control the expenditure itself, in preference to "handing over the money to a New South Wales syndicate." American exporters will be interested in the progress of this measure as directly affecting some of their large lines of Australian merchandise. More especially is this the case in conjunction with the possibility of Imperial (all British) trade relations being drawn closer by means of preferential treatment for British made goods, and thus affecting various other export lines. This subject is to come up for discussion in London next month, when the Australian Prime Minister (Mr.

Barton) will attend the Imperial conferences and discuss with other Colonial Premiers the advantages of such a policy. The feeling of the Australian Ministry as at present constituted appears to be that 5 or 10 per cent. concessions might be considered, but they would stop short at admitting any articles free. The Australian Premier, while in London, will not commit his Federation to any scheme of preferential treatment without first consulting his Parliament.

American manufacturers will do well to watch which way the "preferential cat" will jump, as a 10 per cent. concession in favor of the lines mentioned above would close the Australian market against them.

To return, however, to the subject of Government bonuses—it was only to be expected that the declaration of the Government policy should lead to the announcement of various huge deposits of iron ore which have been lying awaiting development in various parts of the Federated States.

No doubt they exist in a greater or less degree, but it would certainly appear that they must remain undeveloped for some time to come.

Australia, almost equaling the United States of America in area, is unfortunate in that settlement has been and is at present only possible along what may, in comparison with her size, be termed a fringe of coastal territory, chiefly on the east. It is questionable if she will ever be able to carry a population equal to the America of to-day. Lacking possibility of an export trade except in her pastoral and agricultural products, mineral development cannot possibly proceed on lines of any magnitude in face of the competition of the northern world. Add to this the drawbacks such as her expensive inland carriage, her sometimes dangerous experiments in the way of labor legislation, her high rate of wages, and her holiday making capacity, and the need for bonuses to stimulate production is self apparent.

The Australian desire to make Australia entirely self contained must appeal to all Americans, but it seems that the more immediate salvation of the country in the way of mineral production will be in the supply of the royal minerals instead of in what are known, rightly or wrongly, as the "baser" metals.

A recent magazine article on "The Resources of the Australian Interior" truthfully points out the neglected possibilities of development.

The demand for precious stones by the older and wealthier northern hemisphere is a continually growing one, and there is scarcely one of these to be named of which Australia has not yielded specimens.

The blue topaz, always found in close companionship with the diamond, has been found in the hills at Beechworth, Victoria; the ruby, the sapphire, the opal and the true hyacinth, or amaranth, have all been unearthed in the same State.

Yet one hears nothing of any persistent prospecting in search of these minerals, nor are any of the Australian products known to the Old World with the exception of the opals from White Cliffs, New South Wales, where the deposits are regularly worked, and a few smaller fields in Queensland.

Then, again, the gold fields of Australia, according to all practical mining men, are "not even scratched" as yet. There are vast tracts of mountain country, even in the most compact of the States (Victoria), which even yet lie untraversed by explorers, where in all probability mineral wealth exists. It is in the opening up of these tracts and in the organized and concentrated endeavor to their discovery and development, rather than in the bolstering up of small industries, that Australia must win her way to wealth and power amid the nations of the earth.

Mineral deposits of the richer metals exist in far greater degree than those at present being worked, and it only remains for the men and the intelligence to open them up.

In May the Sharon Steel Company, Sharon, Pa., in 365 heats made 19,432 tons of basic open hearth ingots. This breaks the best previous record for any one month at this plant by about 600 tons.

Lake Iron Ore Matters.

Ore Shipments Exceed Estimates.

DULUTH, MINN., June 7, 1902.—Lake ore shipments for the first two months so far exceeded all estimates as to be surprising. They were 5,158,000 tons, or more than three times the shipment to the corresponding date last year. This is not a fair comparison, however, for last season's business did not commence in any considerable volume until the middle of May. But it is double the business of 1900 to the same time, which is a more reasonable basis for comparison and which shows what may be expected later. It is not probable, considering the situation at lower lake ports, with tug strikes and other complications constantly arising on all sides, that the volume of shipments from this time on will be greatly in excess of what was done after June 1 last year; the increase of the year will be in what has already been accomplished. But even a movement similar to last year's from this time on will mean a total of 24,000,000 tons for the season.

Ore to Be Hauled to St. Louis.

An interesting possibility has cropped up this week as one result of the railway merger in the Northwest by which the Great Northern road becomes interested as owner of the Burlington. This is the fact that the Great Northern is to attempt the haul of Mesaba ore to St. Louis for iron making there. The rate to be made by Mr. Hill will, it is reported from inner circles, be equivalent to that for which ore is now taken from the Mesaba to the Ohio valleys and to Pittsburgh. The haul to St. Louis will be over rails owned in part at least by the Great Northern road.

The Vermillion Range.

Daily papers report that the famous section 30 on the Vermillion range, of which considerable has been said of late, has been optioned to the Cleveland Cliffs Iron Company on the basis of a 50-cent royalty and a bonus of \$4,000,000 when the lease shall be taken out. It is known that these are the figures on which the owners of section 30 have for some time hoped to dispose of their property. It is also known, and was referred to in this correspondence at the time the Negaunee mine was sold to the Cleveland Cliffs Company, that the latter were after the property. It is also known that Agent M. M. Duncan, mining engineer; J. O. Jopling of the Cleveland Cliffs Company and a consulting geologist from Harvard University have spent this week at the property. Several of the established mining companies of the Minnesota districts have not been ardent aspirants after the property since the terms of the owners became known, and especially in connection with the drill work that has been done by the Minnesota Iron Company on the east side of section 25 adjoining, which carries the amphitheatrical end of the section 30 jasper outcroppings. If any deal has been made, as is not probable, or is in serious contemplation, as is more than likely, it will be known shortly.

The Mesaba Range.

Two interesting deals are being made on the western Mesaba. One is for a 40-acre tract that has been explored and been found to contain several million tons of ore averaging 56 per cent. iron. This is being sold to a steel making company located near Pittsburgh for \$400,000. It is a comment on the condition of things that the present purchasers of this property were offered the same land less than a year ago at \$35,000 and refused to consider it seriously. The ore has not been found since, for it was then known to exist, but the ore area has been increased, and also the value of 56 per cent. ore has increased. Another deal is for the sale of the fee to a large low grade property in the western Mesaba, under option now for considerably less than \$1,000,000, for a sum said to be pretty close to \$3,000,000. The present option holders have not yet paid their \$750,000 and they have reoptioned at the larger sum to a large Eastern steel making interest. There is the same active interest in explorations on the Mesaba, and on the western end especially, where these deals are taking

place, many men are starting in. One drill contractor has now nearly 100 drills under operation, most of them on contract for various concerns and individuals.

The Marquette Range.

In the vicinity of the Volunteer mine the Donora Mining Company, the western end of the Union Steel Company, are taking much more ore bearing land and now control a very large acreage there. The Volunteer is opening up satisfactorily and will make a considerable tonnage this year, while other properties of the same company will make something of an output. It is possible that the company will do no mining in the Mesaba field this year, but are still exploring there with much vigor and success.

Also on the Marquette range the Foxdale mine, long an abandoned property, is showing up well and will perhaps make a good mine. It is a hard ore proposition and has been in various hands for years. Now the Bird Iron Company have taken the property in hand, have equipped it thoroughly with good machinery and are mining excellent ore in a considerable lens. What they may find with depth is, of course, uncertain, but the indications are excellent.

Geo. Maas of Negaunee has taken the Fogarty property in the Iron River district and will explore it at once.

D. E. W.

An Electric Meter for Both Direct and Alternating Currents.

At the recent *soirée* of the Royal Society, W. M. Mordey and G. F. Fricker exhibited a meter suitable for both direct and alternate currents and capable of being sold at a very low price. The meter is simply a clock with the hairspring of the balance removed, and replaced by a piece or pieces of iron moving in a magnetic field. This field is created by a pair of coils traversed by the current that feeds the lamps to be metered. When there is only one lamp in action the field is very weak, and the clock resembles one that has a very feeble hairspring; in other words, it goes slowly. As more lamps are lighted the field becomes stronger and the rate of vibration quickens, the period of the balance being inversely as the current flowing. There was a large bank of lamps that could be switched on one at a time, and it was interesting to note how the balance responded to each increment of current. As each lamp was turned on the speed augmented, until when all were on it was fairly rapid, recalling a clock beating quarter seconds. As the process was reversed the speed fell off, until when the last lamp was extinguished the meter stopped completely. Two forms of meter were shown. In the more complete one the balance wheel was of slate, and carried on its surfaces several parallel iron wires. It was partly inclosed in two coils like a galvanometer needle, and owing to the pressure of the pallets in the escapement, it always stopped in such a position that the first effect of the current in the coils was to set it in motion, just as a galvanometer needle is set in motion; the effect in this case, however, being to bring the iron needles to a central or axial position in the coil. The balance wheel shaft is carried on a footstep jewel; but in order to relieve that jewel of pressure and prevent risk of injury to it, a torsionless silk fiber suspension is used, attached to the shaft by a bent wire spring; thus practically the whole weight of the shaft and disk is taken off the jewel. The meter is an ampere hour meter, but for use on constant pressure circuits the counter, which is geared to the clock, is arranged to indicate the consumption directly in kilowatt hours or Board of Trade units. These meters are suitable for either direct or alternate current. They may be wound for any pressure. An important feature is that with alternate currents there is no "frequency error," the constant being the same for all practical frequencies. The pressure drop due to the resistance of the coil is about 0.7 per cent. on full load. The winding up of the clockwork is a very simple matter, as one winding is enough to last for about three months on installations of the kind for which the instrument is intended. These instruments are designed especially for small in-

installations of lamps which now in many places form a large proportion of the new work that is coming on supply systems—installations of, say, 12 to 30 lamps. Curves were exhibited showing that the meters were very correct, the error being first positive, then negative, then positive and finally negative again, generally within $2\frac{1}{2}$ per cent.

Standard Pipe Unions.

At the recent Boston meeting of the American Society of Mechanical Engineers a committee on Standard Pipe Unions, composed of E. M. Herr, A. S. Vogt, George M. Bond, William J. Baldwin and Stanley G. Flagg, Jr., presented the following supplementary report, which contains objections to the standard union previously proposed by the committee and answers to those objections:

"After the presentation of the report of your committee, and before its publication, a communication was received from a prominent manufacturer containing criticisms of certain parts of the designs submitted. This communication was in reply to a letter from your committee inclosing drawings and tables of dimensions of the designs of proposed standard malleable unions prepared by them and subsequently submitted, sent to 11 prominent manufacturers of unions requesting suggestions and criticisms. Since these criticisms reached us too late for consideration in our report—and in view of the absence of discussion of same when presented—

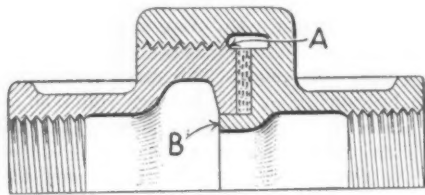


Fig. 1.

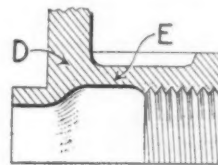


Fig. 2.

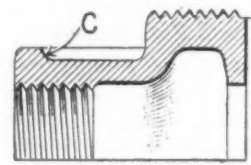


Fig. 3.

STANDARD PIPE UNIONS.

we deem it important to submit this supplementary report.

"A copy of the report submitted at the New York meeting was sent, under date of April 8, 1902, to the same manufacturers to whom the first letter was addressed, who were again requested to criticize it and offer any suggestions for improvements in the designs. An invitation was also extended to send a representative to this meeting to take part in the discussion which we hope to bring out. Replies have been received from four manufacturers.

"One will send a representative to this meeting.

"Two believe the metal in some parts of the designs submitted should be thicker.

"One of these that the unions are generally too long, the other that they are too short; while one indorses also the first and fourth objections submitted by the manufacturer making the most definite objections to the committee's designs, which we give below in full:

"1. The extension A on thread, shown in Fig. 1, is believed to be unnecessary, adding to the length of the coupling, and to all purposes can be provided for by beveling off thread at an angle of 45 degrees, thereby affording protection to the thread and at the same time making it easy to enter the ring.

"2. Lip B on swivel or tail piece appears to be longer than required; 1-32 inch over thickness of packing, or say 3-32 inch, would appear to be all that is sufficient. This long lip interferes materially in springing thread and bottom together when making a short connection.

"3. Bead C on outer edge of the thread, Fig. 2, and bottom piece interferes materially with holding in jaws or chucks for threading, and would be better provided for, if material is required for strength, by slightly adding to the thickness of the metal, say 1-32 inch.

"4. The section D on bottom, Fig. 3, is too heavy in

proportion to the section E, and will result in loose material and consequent leakage.

"5. The length of the union it would appear might be shortened, while at the same time preserving full length in both thread and bottom end.

"6. The ogee on ring might be replaced to good advantage by clean sweep or curve from the flat for wrench to the face of ring. The fillet of the ogee, especially on small sizes, is apt to catch and hold sand, which in galvanizing interferes with clean smooth work.

"Your committee has considered the objections raised, with the following results:

"1. The extension A referred to in the communication was not considered unduly long by your committee in order to secure the proper protection of threaded external portion of the union. Should it be found, however, that this could be advantageously shortened by the test of actual experience, such shortening would in no wise affect the question of the interchangeability, which is of the most vital importance.

"2. The above remarks also apply to the objection that the lip B is too long.

"3. It is considered that the bead C adds considerably to the strength of the union in the most economical and least objectionable manner. It is also believed that special chucks will generally be used for holding this part, with which the bead would not be objectionable; but both it and the ribs will assist in holding the work with properly prepared special chucks.

"4. An examination of a considerable number of

broken unions did not disclose loose material at D, although in some instances this may occur. If so, the suggestion made to lighten at this point would seem the proper remedy and could be done without changing any of the established dimensions.

"5. The length given in column No. 18 of the recommended design was adopted after careful consideration of the length required to properly grasp the union with pipe tongs, &c., and it is believed this is not excessive, but is advantageous and desirable.

"6. The ogee on ring was selected mainly to improve the appearance, and can be changed to a single curve if the ogee is found to interfere with smooth work either in molding or galvanizing."

W. D. Forbes of Hoboken maintained that in order to resist the outward pressure of the steam the shoulder protecting the packing, or gasket, should be placed on the outside.

C. W. Nason of New York said that for high pressure service best practice precluded the use of soft packings. He said that metallic joints should be used, and that where such joints are made with a section of a sphere the spherical surfaces allow for adjustment and trouble is avoided.

Engine Lathes.—An elaborate catalogue by Schumacher & Boye of Cincinnati describes their several patterns of engine lathes. Their 36 and 42 inch engine lathes are built with a view of doing the heaviest work which can be done on lathes of this class without danger to any part of the machine. The head stock is well ribbed and furnished with the best phosphor bronze boxes. The spindle is very large and of hammered crucible steel. The carriage is very long and heavy, provided with key slots and gibbed on both sides. The cross

and length feeds are arranged so that they cannot be engaged while the lathe is cutting screws. The compound rest has power angular feed of 12-inch travel. The apron is made double, preventing any part from overhanging. All shafts in the apron are made of tool steel and run in bronze lined bearings. These lathes are so fitted with their new arrangements for feeding and screw cutting by which eight changes of feed are provided, and these may be multiplied by changing the gears outside of the gear box. The table attached to the head stock shows at a glance the feed given at each setting.

A Proposed Standard for Machine Screw Thread Sizes.*

BY CHARLES C. TYLER, PITTSBURGH, PA.

The sizes of machine screws referred to more particularly in this paper are those less than $\frac{1}{2}$ inch in diameter and designated by "screw gauge numbers." The variations found in the diameter, pitch and form of thread in these sizes, which are not serious to those using only a few hundred screws per year, become a source of large expense and extreme exasperation to those using them by the hundreds of thousands. The whole trouble seems to lie in the fact that there are no recognized basic reference standards having a generally accepted form of thread and diameter, and without them reliable reference, working or limit gauges cannot be exactly reproduced.

The diameters of the threaded portion of small machine screws are at present designated by arbitrary gauge numbers. In one respect these numbers are more reasonable than those of the many wire and sheet metal gauges, in that the larger numbers represent the larger screws. The catalogue of the Brown & Sharpe Mfg. Company contains a "Table of Decimal Equivalents of Screw Gauge for Machine and Wood Screws," and it is there stated that "the difference between consecutive sizes is 0.01316 inch," a difference not easily calibrated by the ordinary measuring instruments. If the diameter of screw gauge No. 1 had been established as 0.01316 inch and the other numbers had been simply multiples thereof the actual diameter of any number would have been easy to determine; but screw gauge No. 1 has a diameter of 0.071 inch, and the zero of the gauge is 0.05784 inch. Without the table the diameter of any gauge number can be found by multiplying the number by 0.01316 inch and adding 0.05784 inch.

The pitches, or number of threads per inch, of small machine screws are apparently standardized only for the sizes having even numbers; but the manufacturers carry in stock screws and taps having a number of different pitches for each size.

Form of Thread.

Any new standard for screws or bolts of any size must have primarily a practical form of thread to meet the indorsement of progressive mechanical engineers. The writer, therefore, suggests for the basic reference standards of machine screws the Sellers or Franklin Institute form of thread, which has an angle of 60 degrees and a truncated or flat top and bottom equal to one-eighth of the pitch of the thread. In addition to its adoption by the United States Navy Department, the many associations, societies and manufacturing establishments in this country as the standard for bolts, nuts and screw threads, this form of thread was also adopted for machine screws by the International Congress for Standardizing Threads, held at Zurich, October 2, 3 and 4, 1898. It is a form capable of being exactly reproduced, is easily maintained and the only practical one in existence which will insure interchangeability. This form of thread is suggested for the basic reference standards only—for machine screws and machine screw taps some modifications of the form will be presented later which are worthy of consideration.

* Abstract of paper presented at the Boston meeting (May, 1902) of the American Society of Mechanical Engineers.

Diameters of Screws.

The present screw gauge has 30 numbers; No. 1 is 0.071 inch diameter, and No. 30 is 0.045264 inch diameter; the even numbered sizes being in more general use, except for the very small sizes. The writer suggests for the standard diameters of small machine screws the 15 diameters from 0.050 inch to 0.250 inch inclusive, shown in the sixth column of Table I. These

Table I.

Present diameters and threads per inch of small machine screws. The difference between consecutive sizes is 0.01316.				Suggested diameters and threads per inch of small machine screws.		
Screw gauge No.	Stand. No. of threads per inch.	Threads also furnished	Diameter in fractional parts of inch.	Diameter in decimal parts of inch.	Diameter in decimal parts of inch.	Pitch.
1	56	56, 60, 64, 72.	0.07100	0.050	72	0.013889
1 1/2	56	56.	0.07758	0.060	64	0.015625
2	56	56, 64.	0.08416	0.070	60	0.016667
3	56	56, 64, 48, 56.	0.09074	0.080	56	0.017857
4	36	36, 32, 40, 47, 44, 48.	0.10448	0.110	44	0.022727
5	36	36, 32, 36, 40, 44, 48.	0.12364	0.125	40	0.025000
6	32	32, 28, 36, 40, 44, 48.	0.14966	0.135	40	0.025000
7	32	24, 28, 30, 32, 36, 40.	0.16912	0.150	36	0.027778
8	32	24, 30, 36, 40, 44.	0.17628	0.165	32	0.031250
9	24	24, 28, 30, 32.	0.18144	0.180	32	0.031250
10	24	20, 22, 24, 30, 32, 36.	0.20260	0.200	30	0.033333
11	24	22, 24, 28, 30.	0.21576	0.220	28	0.035714
12	24	20, 22, 24, 32.	0.22892	0.230	24	0.041667
13	20	14, 18, 22, 24, 26.	0.24208	0.250	24	0.041667
14	20	18, 20, 22, 24.	0.25524	0.26125	22	0.045455
15	18	16, 20, 22, 24, 26.	0.26840	0.28125	22	0.045455
16	18	16, 18, 30.	0.28156	0.29472	20	0.050000
17	18	16, 20, 22, 24, 26.	0.29472	0.30788	20	0.050000
18	16	16, 18, 20, 22, 24.	0.30788	0.32104	18	0.055556
19	16	18, 20, 22, 24.	0.32104	0.33420	18	0.055556
20	16	18, 20, 22, 24.	0.33420	0.34736	18	0.055556
22	16	18.	0.34736	0.36052	16	0.062500
24	16	14, 18, 20, 22, 24.	0.36052	0.37368	16	0.062500
26	16	14.	0.37368	0.38684	16	0.062500
28	14	16.	0.38684	0.40000	16	0.062500
30	14	16.	0.40000	0.41316	16	0.062500
				0.500	14	0.071429

diameters were selected from among the sizes of the decimal gauge, are in thousandths of an inch and can be easily calibrated by the ordinary measuring instruments.

The sizes of the decimal gauge have already been recommended by the American Society of Mechanical Engineers and adopted by the American Railway Master Mechanics' Association and the American Steel Manufacturers' Association. Eight diameters larger than 0.250 inch, advancing by thirty-seconds of an inch, are given in the tables simply to fully cover the range of the screw gauge numbers.

Pitch of Screws.

The pitch, or number of threads per inch, of small machine screws varies with the work for which they are used; very thin pieces requiring finer pitches than thick ones. That variations in pitch are called for is shown by the assortment given for each diameter of screw. The writer suggests for the standard pitches of small machine screws those given in the seventh and eighth columns of Table I. These pitches were determined by the formula

$$p = 0.23 \sqrt{d + 0.625} - 0.175.$$

$$p = \text{pitch, } d = \text{diameter.}$$

This formula was proposed by George M. Bond in 1882, and referred to in a lecture delivered by him before the Franklin Institute, February 29, 1884, on the subject "Standards of Length as Applied to Gauge Dimensions." This formula differs from the one used for the determination of the pitch of United States standard bolts, nuts and screw threads only in its coefficient, which is 0.23 instead of 0.24, and increases the number of threads per inch more rapidly as the diameter decreases.

The exact pitches derived from the formula are given in Table II, and the suggested standard pitches will be found to closely approximate the derived pitches.

Table II.—Pitch Determinations by the Formula

$$p = 0.23 \sqrt{d} + 0.625 - 0.175.$$

p = pitch, d = diameter.

Diameter in decimal parts of inch.	Pitch obtained by formula.	Equivalent threads per inch.	Suggested standard No. threads per inch.
0.050	0.013968	71.6	72
0.060	0.015348	65.15	64
0.070	0.016728	59.8	60
0.080	0.018108	55.22	56
0.090	0.019488	51.31	52
0.100	0.020822	48.02	48
0.110	0.022179	45.08	44
0.125	0.024080	41.53	40
0.135	0.025514	39.19	40
0.150	0.027469	36.4	36
0.165	0.029424	33.95	32
0.180	0.031356	31.89	32
0.200	0.033909	29.46	30
0.220	0.036439	27.44	28
0.250	0.040142	24.91	24
0.28125	0.043960	22.75	22
0.3125	0.047686	20.97	20
0.34375	0.051366	19.46	20
0.375	0.055000	18.18	18
0.40625	0.058565	17.07	18
0.4375	0.062061	16.11	16
0.46875	0.065557	15.25	16
0.500	0.068938	14.5	14

Modification of Thread Form.

Screws of any size fit better in the angle of the thread in tapped holes if there is clearance at the top

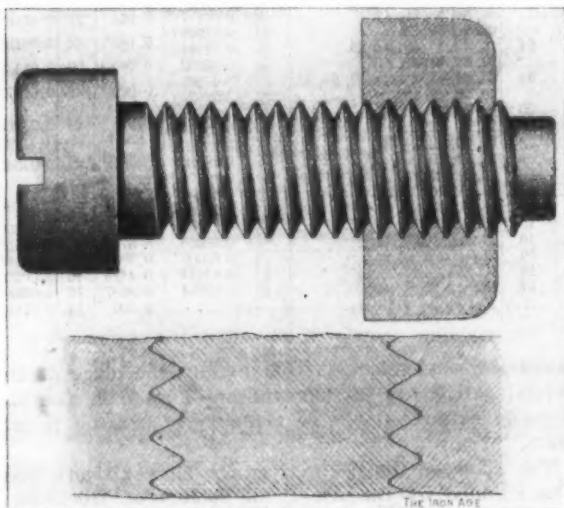


Fig. 1.—Proposed Thread.

A PROPOSED STANDARD FOR MACHINE SCREW THREAD SIZES.

and bottom of the threads. Bolts and nuts, when made with threads in exact accordance with the United States standard thread, do not have this clearance, yet by a slight modification of this form of thread clearance can be obtained and still preserve the desirable feature of the practical interchangeability of thread sizes. A change in the amount of truncation or flat at the bottom of the thread of screws and at the top of the thread of taps would be the only modification of the United States standard thread necessary to obtain the desired clearance; but for any given size the diameter of the screws and taps should remain the same when measured in the angle of the thread.

For screws, the form of thread suggested has an angle of 60 degrees, a flat at the top of the thread $\frac{1}{8}$ of pitch, and a flat at the bottom of the thread of 1-16 of pitch.

For taps the form of the thread suggested has an angle of 60 degrees, a flat at the top of the thread 1-16 of pitch, and a flat at the bottom of the thread $\frac{1}{8}$ of pitch. A screw and sectional tapped nut and a sectional screw and nut having these modified forms of thread, giving clearance at the top and bottom of the thread, are shown in Fig. 1.

When a screw and tap measure the same diameter in the angle of the thread the tap has a larger external diameter than the screw if the top of the thread is flattened 1-16 of pitch, and these increased external diameters of taps for each size of screw are shown in the first column of Table III.

Standard Reference Thread Gauges.

To insure the interchangeability of machine screws and taps a practical system of gauging should be provided and ultimate standards of reference are desirable, particularly in cases of disputed thread sizes. The modifications of the forms of thread for screws and taps to give clearance, each being based on the United States standard thread, make it seem desirable to provide three sets of standard reference thread gauges for each gauge diameter; one basic, one for screws and one for taps.

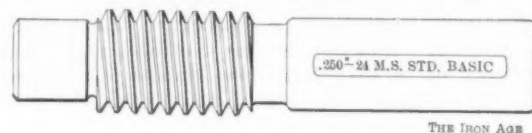
Basic Standard Reference Thread Gauges.

The writer would suggest as the foundation of the system a set of basic standard reference thread gauges; these gauges to be made of unhardened tool steel, to represent exactly, in every detail, the United States form of thread, the diameter at the top of thread, the diameter at the bottom of thread and the correct pitch; each basic standard gauge to have plainly marked thereon the diameter, number of threads per inch and M. S. Standard Basic (Machine Screw Standard), as shown in Fig. 2, which also gives the thread formula.

The basic standards should be used only for comparative calibration in the making of the reference standards for screws and taps.

Standard Reference Thread Gauges for Screws.

These gauges are to be made of unhardened tool steel, to represent exactly, in every detail, the modified



FORM OF THREAD

$$\begin{cases} p = \text{pitch} = \frac{1}{\text{number of threads per inch}} \\ d = \text{depth} = p \times .5493 \\ f = \text{flat} = \frac{p}{8} \end{cases}$$

Fig. 2.—Basic Standard Reference Thread Gauges.

United States form of thread (having an angle of 60 degrees, a flat at the top of thread $\frac{1}{8}$ of pitch and a flat at the bottom of thread 1-16 of pitch), the diameter at the top of thread, the diameter at the bottom of thread and the correct pitch. Each standard for screw gauge is to have plainly marked thereon the diameter, number of threads per inch, and M. S. Standard Screw, as shown in Fig. 3, which also gives the thread formula.

The standards for screw gauges should be exact duplicates of the basic standards in external diameters, in pitch and in diameter measured in the angle of the thread, and vary from them only in the reduced diameter at the bottom of the thread, due to the increased depth of the thread by 1-16 of pitch.

Standard Reference Thread Gauges for Taps.

These gauges are to be made of unhardened tool steel, to represent exactly, in every detail, the modified United States form of thread (having an angle of 60 degrees, a flat at the top of thread 1-16 of pitch and a flat at the bottom of the thread $\frac{1}{8}$ of pitch), the diameter at the top of the thread, the diameter at the bottom of the thread and the correct pitch. Each standard for tap gauges is to have plainly marked thereon

the diameter, number of threads per inch and M. S. Standard Tap, as shown in Fig. 4, which also gives the thread formula.

Table III.—Standard Reference Thread Gauges.

Standard gauges for taps.		Basic standard reference gauges		Standard gauges for screws	
Diam. top of thread.	Diam. at root of thread.	Diam. top of thread.	Threads per inch.	Diam. at root of thread.	Diam. top of thread.
0.05151	0.03196	0.050	72	0.03196	0.050
0.06170	0.03971	0.060	64	0.03971	0.060
0.07180	0.04835	0.070	60	0.04835	0.070
0.08194	0.05681	0.080	56	0.05681	0.080
0.09208	0.06502	0.090	52	0.06502	0.090
0.10226	0.07294	0.100	48	0.07294	0.100
0.11246	0.08048	0.110	44	0.08048	0.110
0.12771	0.09253	0.125	40	0.09253	0.125
0.13771	0.10253	0.135	40	0.10253	0.135
0.15302	0.11393	0.150	36	0.11393	0.150
0.16838	0.12441	0.165	32	0.12441	0.165
0.18338	0.13941	0.180	32	0.13941	0.180
0.20361	0.15670	0.200	30	0.15670	0.200
0.22387	0.17361	0.220	28	0.17361	0.220
0.25452	0.19588	0.250	24	0.19588	0.250
0.28623	0.22226	0.28125	22	0.22226	0.28125
0.31791	0.24755	0.3125	20	0.24755	0.3125
0.34921	0.27885	0.34375	20	0.27885	0.34375
0.38102	0.30284	0.375	18	0.30284	0.375
0.41232	0.33414	0.40625	18	0.33414	0.40625
0.44427	0.35632	0.4375	16	0.35632	0.4375
0.47557	0.38762	0.46875	16	0.38762	0.46875
0.50774	0.40722	0.500	14	0.40722	0.500

The standards for tap gauges should be exact duplicates of the basic standards in diameter at the bottom

diameters, without adjustment for taking up wear, require special taps for their manufacture, and change size so rapidly that they are hardly practical; when provided with adjustment for taking up wear they become quite expensive, and to insure correctness of size and to guard against being tampered with they must be frequently inspected; the use of either style of gauge for the inspection of screws is a slow process.

The external diameter of the threaded portion of a screw can be easily calibrated by the ordinary micrometer caliper, or limit hole or notched gauges can be satisfactorily used. To determine the diameter of screws when measured in the angle of the thread the writer suggests the use of some special indicating instrument by which the diameter of the screw may be quickly compared with the diameter of the working gauges for screws.

The working gauges for screws should be unhardened and exact duplicates of the standard reference thread gauges for screws, in external diameter, in diameter at the bottom of thread, in pitch, and in diameter measured in the angle of the thread; each working gauge for screws to have plainly marked thereon the diameter, number of threads per inch, and "machine screw."

Working Gauges for Taps.

The measurement of taps is fully as important as the measurement of screws. The tap, however, may be quite a little larger than the gauge size in external diameter, in fact made sharp V at the top and somewhat

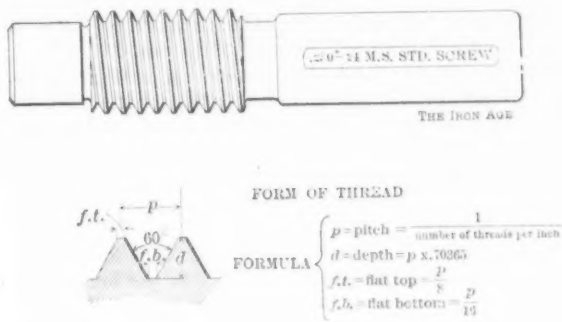


Fig. 3.—Standard Reference Thread Gauges for Screws.

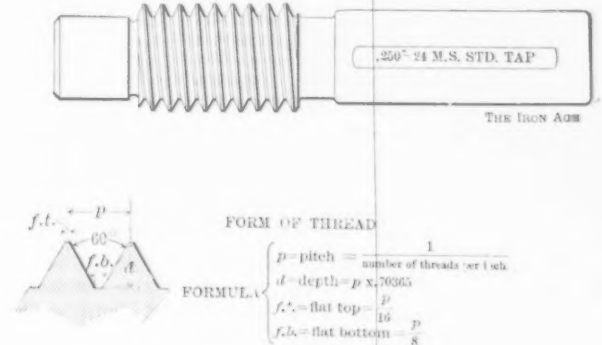


Fig. 4.—Standard Reference Thread Gauges for Taps.

A PROPOSED STANDARD FOR MACHINE SCREW THREAD SIZES.

of the thread, in pitch and in diameter measured in the angle of the thread, and vary from them only in the increased external diameter at the top of the thread, due to the increased height of the thread by 1-16 of the pitch. Standard reference thread gauges are given in Table III.

Standard reference thread gauges for screws and taps should be used only for comparative calibration in the making of working gauges for screws and taps, and to detect by calibration the wear of the working gauges in actual use. If used only for the above purposes these gauges would remain standards indefinitely, but if, through accident or carelessness, they are injured, new references gauges could be exactly reproduced, provided the set of basic standards had been carefully preserved in a safe or vault, where all such standards should be kept.

Working Gauges for Screws.

The important measurement of a screw thread is its diameter as compared with the diameter of the standard reference thread gauge for screws when measured in the angle of the thread. A screw thread may be quite a little smaller than the gauge size in external diameter and make almost a sharp V at the bottom and still fit satisfactorily in a standard tapped hole, provided it is the correct diameter in the angle of the thread.

The ordinary internal thread limit gauges for small

larger in diameter at the bottom of the thread (with wider flat), and still tap a hole into which a standard threaded screw would fit satisfactorily, provided it is the correct diameter in the angle of the thread. The suggested method of determining the diameter of taps when measured in the angle of the thread is the same as for screws—i. e., the use of some special indicating instrument by which the diameter of the tap may be quickly compared with the diameter of the working gauges for taps.

The working gauges for taps should be unhardened and exact duplicates of the standard reference thread gauges for taps, in external diameter, in diameter at the bottom of thread, in pitch, and in diameter measured in the angle of the thread; each working gauge for taps to have plainly marked thereon the diameter, number of threads per inch, and "machine screw taps."

The handles of all working gauges should be of some form easily distinguished from that of the reference gauges.

It is not to be expected that the thread sizes of small screws and taps can be made commercially to exactly correspond with the gauge dimensions, and established limits of variation may prevent controversy if the sizes of either are in dispute.

To insure the satisfactory fit of a screw in a tapped hole it seems obvious that screws should never be larger than the working gauges, though they may be a trifle smaller; and that taps should never be smaller than the

working gauges, though they may be somewhat larger. The variations from the working gauge sizes, therefore, should always be minus for the screws and plus for the taps.

For screws and taps of the small diameters under consideration the limits may well be determined by some multiple of the pitch and the writer suggests pitch \times 0.05 as a practical formula.

The limits of variation in the diameters of machine screws and taps when measured in the angle of the thread as determined by the formula are shown in Table IV:

Table IV.—Limits of Variation in Diameters of Machine Screws and Taps when Measured in Angle of Thread.

Formula, Limit = pitch \times 0.05.			
Taps.	Sizes.	Screws.	Sum of Limits.
+ 0.0007	0.050	— 0.0007	0.0014
+ 0.0008	0.060	— 0.0008	0.0016
+ 0.0008	0.070	— 0.0008	0.0016
+ 0.0009	0.080	— 0.0009	0.0018
+ 0.0010	0.090	— 0.0010	0.0020
+ 0.0011	0.100	— 0.0011	0.0022
+ 0.0012	0.110	— 0.0012	0.0024
+ 0.0013	0.125	— 0.0013	0.0026
+ 0.0013	0.135	— 0.0013	0.0026
+ 0.0014	0.150	— 0.0014	0.0028
+ 0.0016	0.165	— 0.0016	0.0032
+ 0.0016	0.180	— 0.0016	0.0032
+ 0.0017	0.200	— 0.0017	0.0034
+ 0.0018	0.220	— 0.0018	0.0036
+ 0.0021	0.250	— 0.0021	0.0042
+ 0.0023	0.28125	— 0.0023	0.0046
+ 0.0025	0.3125	— 0.0025	0.0050
+ 0.0025	0.34375	— 0.0025	0.0050
+ 0.0028	0.375	— 0.0028	0.0056
+ 0.0028	0.40625	— 0.0028	0.0056
+ 0.0031	0.4375	— 0.0031	0.0062
+ 0.0031	0.46875	— 0.0031	0.0062
+ 0.0036	0.500	— 0.0036	0.0072

For the rapid inspection of screws or taps to determine if they are within these limits of variation the method suggested is their comparison by calibration with the working gauges by the use of a special indicating instrument which will instantly give the correct reading. For the limits of variation of the external thread diameters of screws and taps the formula pitch \times 0.1 is suggested, and the derived limit sizes by this formula are shown in Table V:

Table V.—Limits of Variation in External Thread Diameters of Machine Screws and Taps.

Formula = Pitch \times 0.1.			
Taps.	Sizes.	Screws.	Sum of Limits.
+ 0.0014	0.050	— 0.0014	0.0028
+ 0.0016	0.060	— 0.0016	0.0032
+ 0.0016	0.070	— 0.0016	0.0032
+ 0.0018	0.080	— 0.0018	0.0036
+ 0.0020	0.090	— 0.0020	0.0040
+ 0.0022	0.100	— 0.0022	0.0044
+ 0.0024	0.110	— 0.0024	0.0048
+ 0.0026	0.125	— 0.0026	0.0052
+ 0.0026	0.135	— 0.0026	0.0052
+ 0.0028	0.150	— 0.0028	0.0056
+ 0.0032	0.165	— 0.0032	0.0064
+ 0.0032	0.180	— 0.0032	0.0064
+ 0.0034	0.200	— 0.0034	0.0068
+ 0.0036	0.220	— 0.0036	0.0072
+ 0.0042	0.250	— 0.0042	0.0084
+ 0.0046	0.28125	— 0.0046	0.0092
+ 0.0050	0.3125	— 0.0050	0.0100
+ 0.0050	0.34375	— 0.0050	0.0100
+ 0.0056	0.375	— 0.0056	0.0112
+ 0.0056	0.40625	— 0.0056	0.0112
+ 0.0062	0.4375	— 0.0062	0.0124
+ 0.0062	0.46875	— 0.0062	0.0124
+ 0.0072	0.500	— 0.0072	0.0144

Limits of Variation in Screw and Tap Pitches.

Screws and taps often have threads which have an incorrect pitch or lead and therefore do not fit properly. These errors are probably due to the warping of dies and taps during the tempering process. Slight changes in lead are not very serious, but if limits be established there need be no dispute later by interested parties. The limits suggested are 0.002 inch plus or minus, for either screws or taps, for 1 inch of length. By suitable jaws the errors of pitch may be determined by using the same instrument as for calibrating in the angle of thread.

Table VI.—Thread Measurements for Machine Screws and Taps.

Diam. of screw.	Number of threads per inch.	Pitch.	Width of flat at top of thread, $\frac{1}{2}$ of pitch.		Width of flat at bottom of thread, $\frac{1}{16}$ of pitch.		Two times depth standard U. S. machine screw thread.	
			of thread, $\frac{1}{2}$ of pitch.		of thread, $\frac{1}{16}$ of pitch.		thread.	
0.050	72	0.013889	0.001736	0.000868	0.01804	0.01955		
0.060	64	0.015625	0.001953	0.000977	0.02029	0.02199		
0.070	60	0.016667	0.002083	0.001042	0.02165	0.02345		
0.080	56	0.017857	0.002232	0.001116	0.02319	0.02513		
0.090	52	0.019231	0.002404	0.001202	0.02498	0.02706		
0.100	48	0.020833	0.002604	0.001302	0.02706	0.02932		
0.110	44	0.022727	0.002841	0.001421	0.02952	0.03198		
0.125	40	0.025000	0.003125	0.001563	0.03247	0.03518		
0.135	40	0.025000	0.003125	0.001563	0.03247	0.03518		
0.150	36	0.027778	0.003472	0.001736	0.03608	0.03909		
0.165	32	0.031250	0.003906	0.001953	0.04059	0.04397		
0.180	32	0.031250	0.003906	0.001953	0.04059	0.04397		
0.200	30	0.033333	0.004167	0.002084	0.04330	0.04691		
0.220	28	0.035714	0.004464	0.002232	0.04639	0.05026		
0.250	24	0.041667	0.005208	0.002604	0.05412	0.05864		
0.28125	22	0.045455	0.005682	0.002841	0.05904	0.06397		
0.3125	20	0.050000	0.006250	0.003125	0.06495	0.07036		
0.34375	20	0.050000	0.006250	0.003125	0.06495	0.07036		
0.375	18	0.055556	0.006945	0.003473	0.07216	0.07818		
0.40625	18	0.055556	0.006945	0.003473	0.07216	0.07818		
0.4375	16	0.062500	0.007813	0.003907	0.08118	0.08795		
0.46875	16	0.062500	0.007813	0.003907	0.08118	0.08795		
0.500	14	0.071429	0.008929	0.004465	0.09278	0.10052		

Special Indicating Instruments.

There are in use in the different watch factories several kinds of rack and pinion gauges, of both the horizontal and vertical types, for calibrating the diameter, length and thickness of watch parts. The horizontal or "fine" gauge might be readily adapted for the special indicating instrument. The spindle passing through the circular portion of the instrument has a rack cut upon it which engages with a short train of wheels, giving a circular motion to the hand.

The ratio of the rack and wheels in this gauge is such that a rotation of the hand equal to one division on the dial represents a longitudinal movement of the spindle of 0.001 inch. To one end of the spindle is attached a jaw having a single V edge with an angle of 60 degrees and properly flattened, so that it cannot touch the bottom of the thread of a screw having 24 threads per inch; this jaw can be adjusted lengthwise upon the spindle by means of a screw in the end of the spindle. The stationary jaw has two parallel V edges with angles of 60 degrees properly flattened and the edges correctly spaced for the pitch. In measuring a screw the contact is insured by a long helical spring connecting with the case and spindle, which gives a nearly uniform pressure between the jaws. To compare the diameter of a screw with its proper working gauge, insert the gauge between the jaws and move the jaw with single V edge by the screw until the hand registers 0; after this adjustment insert the screw, and its variation from the diameter of the gauge will be indicated by the hand upon the dial.

The small tool department of the Pratt & Whitney Company has for several years used an instrument to determine the variations in thread diameters of taps under $\frac{1}{2}$ inch diameter.

If the accuracy of either style of instrument shown should be questioned, the fact to be borne in mind is that the exact diameter of a screw when measured in the angle of the thread is not essential—it is that diameter when compared with the diameter of the gauge that is the important measurement.

Discussion.

Supplementary to his paper Mr. Tyler presented a table showing some recent comparisons between commercial machine screws and taps and a set of soft steel plug gauges. He said: The gauges were made about 18 months ago. Their diameters over the top of thread were in accordance with the numbered gauge diameters, and the threads were a V in form. The screws were of both brass and steel—taken from regular storeroom stock—and 5 gross of each size were compared with the gauges. The taps were bought within two months from the J. M. Carpenter Tap & Die Company, Pratt & Whitney Company, Morse Twist Drill & Machine Company, S. W. Card Mfg. Company and the Standard Tool Company. Twelve taps of each screw gauge and size from

each of the manufacturers were compared with the gauges. Taps were ordered from several other manufacturers but had not been received two weeks ago.

The comparison of 11 sizes of screws and taps was made by the use of a special indicating instrument made by the American Watch Tool Company, measuring in the angle of the thread, and the results are given in the table following:

A sixth clause was added which reads as follows: "On all 10-inch guide and hoop mills with one furnace averaging \$35 per turn or more, or with two furnaces averaging \$65 per turn or more on a 9¼-hour system, based on a 1-cent rate card, the eight-hour system should be adopted. On bar and 12-inch mills averaging 60,000 pounds on one furnace and 90,000 pounds on two furnaces per turn on the 9¼-hour system the eight-hour system should be adopted."

The changes in the boiling scale follow:
There was added to foot note 19 the words: "or with less

Variations Found in Commercial Machine Screws and Taps.									
Size. Gauge No.	Screws.			Taps.			Combined.		
	Max. Inch.	Min. Inch.	Total. Inch.	Max. Inch.	Min. Inch.	Total. Inch.	Max. Inch.	Min. Inch.	Total. Inch.
2-64	+ 0.006	— 0.002	0.009	+ 0.003	+ 0.003	0.010	+ 0.013	— 0.002	0.015
2-56	+ 0.006	.....	0.006	+ 0.014	+ 0.008	0.006	+ 0.014	.....	0.014
4-40	+ 0.012	— 0.002	0.015	+ 0.014	+ 0.005	0.009	+ 0.014	— 0.002	0.016
4-32	+ 0.006	+ 0.002	0.004	+ 0.012	+ 0.009	0.003	+ 0.012	+ 0.002	0.010
6-32	+ 0.006	.....	0.006	+ 0.014	+ 0.002	0.012	+ 0.014	.....	0.014
8-32	+ 0.003	— 0.004	0.007	+ 0.008	+ 0.001	0.007	+ 0.008	— 0.004	0.012
10-32	+ 0.005	— 0.001	0.006	+ 0.010	+ 0.002	0.008	+ 0.010	— 0.001	0.011
10-24	+ 0.004	— 0.002	0.006	+ 0.009	+ 0.002	0.007	+ 0.009	— 0.002	0.011
12-32	+ 0.005	— 0.001	0.006	+ 0.013	+ 0.004	0.009	+ 0.013	— 0.001	0.014
12-24	+ 0.008	— 0.002	0.010	+ 0.011	+ 0.003	0.008	+ 0.011	— 0.002	0.013
14-24	+ 0.008	— 0.003	0.011	+ 0.013	+ 0.004	0.009	+ 0.013	— 0.003	0.016

It is well known that the gauges used are too small in diameter in the angle of thread, but they serve the purpose of showing the variations in the size of the regular screws and taps which can now be bought in the open market.

George M. Bond of Hartford commented upon the necessity of determining sizes by the sides of threads and giving clearance at the top and bottom.

Oberlin Smith of Bridgeton, N. J., spoke in favor of having the bolt larger than the tap, but urged that the difference in the sizes should be a standard amount. He insisted upon the necessity of having the threads the same on bolts and machine screws in sizes ranging between ¼ and ½ inch. He said that while it doubtless was true that threads of the smaller sizes of Sellers' standard bolts are too coarse, it would be better to adhere to them than to adopt an additional standard.

Ambrose Swasey of Cleveland presented a motion, which was carried, to the effect that the matter be referred to a committee of five, who are to draw up a standard system of machine screw threads to be referred to the council with power.

George R. Stetson of New Bedford, Mass., spoke of the difficulty encountered in maintaining the correct "standard" pitch with die cut threads. This, he said, is impossible when the dies commence to become dull.

Wilfred Lewis of Philadelphia said that the principal difficulty with the Sellers formula was that when the diameter is zero it does not give zero pitch. He suggested a formula which overcomes this objection and at the same time agrees with the Sellers scale.

The Amalgamated Scales.

At a conference held in Columbus, Ohio, recently, between officials of the Republic Iron & Steel Company and the Conference Committee of the Amalgamated Association, the wage scales governing the mills of the Republic Iron & Steel Company for the year ending June 30, 1903, were adopted. Some slight changes were made in the foot notes, and the representatives of the Republic Iron & Steel Company agreed to introduce the eight-hour system along the lines asked for by the Wheeling convention of the Amalgamated Association as soon as this could be done. This is to apply to rollers as well as other members of the crew. The changes in the foot notes adopted at the conference are as follows:

In clause 2 of the memorandum of agreement the limit was reduced from 160 pounds to 150 pounds.

Clause 5 was changed to read as follows: "On finishing mills working three turns, eight hours shall constitute a day's work. Rolling shall not start earlier than 5 a.m. Monday and a week's work shall finish after the first eight-hour shift on Saturday. On all mills working three turns a third roller should be employed." Heretofore the charging time amounted to 9¼ hours and it was usually 12 hours before the turn finished its work.

than 50 per cent. of pig metal, 50 cents extra shall be paid." This is a concession to the men.

Foot note 24 was changed to read: "that puddlers when boiling metal shall only lose the amount over the limit of the ball." Heretofore the men lost the entire ball when the weight exceeded ten pounds over the limit provided.

New clause 26 follows: "That where pipe is worked in cinder bottom furnaces mixed with light scrap it shall be cut 4 to 6 inches long for charging." This is another concession to the men.

New note 31: "That on all mills where screenings from the squeezers and rolls are given to puddlers, when working swarth, the full boiling price be paid and that such screenings cannot be classed as mixed material." Heretofore the puddlers received only half price for screenings.

In the muck or puddle mill scale clause 5 was changed to read: "On mills averaging 16 tons or less per turn in two weeks the company shall pay the drag-outs."

In the busheling and sand bottom scale the following was added to clause 6: "Total bundles not to exceed 80 pounds to each bundle." New clauses 7 and 8: "That when light scrap is worked without turnings 20 cents extra above the light scrap price shall be paid. That when heavy scrap is worked alone on sand bottom without turnings, the price to be 20 cents above the price for busheling."

In bar and 12-inch mill scales there was added to clause 7: "Except on straight two-high bar mills." The following new clauses were adopted: "12. Companies shall pay not less than one-half the firemen's wages on coal heating furnaces. 13. Night turn roller shall receive not less than one-half the straight price for rolling. 14. That when a mixed heat of iron and steel is worked, and a majority of the heat is iron, then the whole heat shall be paid at iron prices."

Guide, 10-inch, hoop and cotton tie mill scale changes were as follows: New clause 14. "When working non-uniform billets, such as cobbles and scrap yard billets, 21 cents shall be paid for rolling, 10½ cents for heating and 5¼ cents for roughing and catching, each to be added to the straight price per ton for working piles. This to apply when the average output is reduced one-sixth or more. 15. That the price for ¾ by No. 18 Star Iron shall be as follows: Roller, \$3.53; heater, \$1.76½; rougher and catcher, 96 cents. 16. Company shall pay not less than one-half the firemen's wages in coal heating furnaces."

On Friday and Saturday, June 6 and 7, a conference was held at Pittsburgh between I. W. Jenks, representing the American Steel Hoop Company, and the Conference Committee of the Amalgamated Association. However, some differences arose as to the construction of certain foot notes in the scale and no settlement was reached. Another conference will be held at an early date between the Amalgamated Association and the American Steel Hoop Company, probably next week. It is understood that the differences are slight and will be adjusted satisfactorily, and that no strike among the mills of the American Steel Hoop Company is likely.

On Friday, June 13, a conference between representatives of the American Sheet Steel Company and the Amalgamated Association will be held in Pittsburgh, when it is expected the wage scale governing sheet mills for the year ending June 30, 1903, will be adopted. No conference has yet been arranged by the Amalgamated Association with the American Tin Plate Company, but it will likely be held next week or the week after.

The Production of Coal in 1901.

Now Crowding 300,000,000 Tons.

WASHINGTON, June 10, 1902.—The United States Geological Survey has prepared a preliminary report upon the production of coal in the United States in 1901, based upon the returns representing 97 per cent. of the entire output, which show that 292,240,758 short tons were mined during the year, valued at \$348,813,831. As compared with 1900, when the output amounted to 269,881,827 short tons, worth \$306,891,364, this represents an increase of 22,358,931 short tons, or 8 per cent. in quantity, and of \$41,922,467 or 13.6 per cent. in value. The production of Pennsylvania anthracite showed a phenomenal increase—namely, from 51,221,353 long tons (equivalent to 57,367,915 short tons) in 1900 to 60,242,560 long tons, or 67,471,667 short tons, in 1901. This represented a gain of 17½ per cent., the largest percentage of gain made by the anthracite trade in 20 years. Part of this increase in 1901 was due to a decreased output of anthracite in 1900, as compared with 1899, as owing to the historic strike of 1900 the output that year was reduced by over 2,500,000 tons. The average price for the marketed anthracite coal—that is, the product shipped to market or sold to local trade, and exclusive of the colliery consumption, which amounted to about 10 per cent. of the total—was \$2.05, the highest figure obtained since 1888.

The production of bituminous coal, lignite, cannel coal, &c., including a small amount of anthracite from Colorado and New Mexico, increased from 212,513,912 short tons in 1900 to 224,769,091 short tons in 1901, indicating a gain of 12,255,179 tons, or about 6 per cent. The value of this product amounted to \$236,309,811, as compared with \$221,133,513 in 1900, an increase of \$15,176,298, or a little less than 7 per cent. The price of the bituminous product did not show any material advance in 1901, the average being about 0.8 cent higher than in 1900.

Of the 27 States producing coal in 1901, all but four showed increased production. The four whose product decreased were California, Montana, New Mexico and Tennessee. The production by States is shown in the following table:

Coal Production of the United States in 1901.		
Bituminous.	Short tons.	Value.
Alabama	9,078,677	\$9,987,811
Arkansas	1,784,136	2,033,193
California	151,079	394,106
Colorado	5,699,016	6,441,891
Georgia and North Carolina.....	354,825	426,685
Idaho .....	.....	.....
Illinois	27,313,296	28,452,278
Indiana	6,962,940	7,078,842
Indian Territory.....	2,406,943	3,887,793
Iowa	5,578,522	8,016,274
Kansas	4,880,526	5,973,381
Kentucky	5,487,994	5,208,094
Maryland	5,113,127	5,046,491
Michigan	1,040,530	1,543,756
Missouri	3,799,993	4,703,174
Montana	1,396,081	2,009,316
New Mexico.....	1,086,546	1,546,652
North Dakota.....	166,085	212,635
Ohio	19,695,723	19,789,958
Oregon	69,011	173,646
Pennsylvania	82,914,840	82,099,906
Tennessee	3,546,551	3,969,249
Texas	1,086,012	1,885,083
Utah	322,614	1,666,082
Virginia	2,953,999	2,523,270
Washington	2,578,217	4,271,076
West Virginia.....	23,816,434	29,908,795
Wyoming	4,485,374	6,060,462
Total bituminous.....	224,769,091	\$236,309,811
Pennsylvania anthracite.....	67,471,667	112,504,020
	292,240,758	\$348,813,831

The preliminary report issued by the Inspector of Mines for Great Britain shows that the production of coal in the United Kingdom last year was 219,037,240 long tons, a decrease of 6,132,923 long tons from 1900. Reducing the product of the United States to the same unit, it is found that it amounted to 260,929,248 long tons, which is 42,439,760 long tons, or nearly 20 per cent., more than that of Great Britain. The coal output of her colonies and dependencies (including India) aggregated in 1900 about 17,000,000 long tons, so that

taking all the British Empire as one producer, it still falls short of the coal product of the United States last year by from 20,000,000 to 25,000,000 long tons. Our coal production last year was nearly 80 per cent. larger than Germany's, nearly seven times that of Austria-Hungary, and more than eight times that of France.

W. L. C.

The Great Lakes Engineering Works.

Through the efforts of John R. Russel, secretary of the Russel Wheel & Foundry Company, Detroit, Mich., and others prominently identified with the foundry trade the Great Lakes Engineering Works were organized, and on Saturday, May 31, the company took on the plant and business of S. F. Hodge & Co. of Detroit, known for years as the Riverside Iron Works. Associated with Mr. Russel in the undertaking were H. W. Hoyt, vice-president of the Allis-Chalmers Company; Antonio C. Pessano, vice-president and general manager of the George V. Cresson Company of Philadelphia; George H. Russel, president of the State Savings Bank of Detroit, and John A. Penton of the Foundry and the Iron Trade Review. At a meeting held on that day the organization of the company was completed by the election of the following officers: Antonio C. Pessano, president and general manager; H. W. Hoyt, vice-president, and John R. Russel, secretary and treasurer, who, with George H. Russel and John A. Penton, constitute the Board of Directors. The capital stock remains the same as that of the Hodge Company, \$200,000. The business will be substantially that of the old company, the building of marine and stationary engines, propeller wheels, marine pumps and condensers, centrifugal pumps, dredging and mining machinery, forgings, fly wheels, rope wheels and gearing and general marine repairs. Mr. Pessano has resigned as an officer of the George V. Cresson Company and disposed of his holdings, and will remove to Detroit.

The Hodge works were started in 1863, the present corporation dating back to 1883. The plant is an extensive one, covering an area of 240 x 450 feet, and consists of a main building, 100 feet square, four stories high, of brick construction; foundry, 84 x 160 feet, and machine shop, 84 x 150 feet. The shops are equipped throughout with electric traveling cranes for handling the heaviest class of work, and switches from the Grand Trunk and Lake Shore & Michigan Southern railways and 350 feet of dockage provide excellent shipping facilities. Some heavy tools will be added to the equipment shortly and other improvements made to permit of the rapid expansion of the business.

In addition to those named the following are stockholders in the Great Lakes Engineering Works: H. C. Potter, Jr., vice-president of the State Savings Bank; Walter S. Russel, vice-president and general manager of the Russel Wheel & Foundry Company, and Jno. H. Avery, president of the Avery Line of steamers.

Charles E. Graves, assistant secretary of the Republic Iron & Steel Company; Ralph P. Zint, assistant general sales agent, and P. G. Maitland, chief of the voucher department, have been elected trustees by employees of the Republic Iron & Steel Company to hold in trust the stock of the corporation purchased by the employees in accordance with the profit-sharing plan in force. F. T. Cardwell of the accounting department has been elected secretary and treasurer.

Bernard, Gridley Company have purchased the stock and accounts of the Boston office of the Westmoreland Steel Company, Greensburg, Pa., makers of high grade tool steel, and will continue the business in enlarged quarters at 451-453 Atlantic avenue, Boston. C. A. Gridley of this concern is well known to the trade in New England, having been connected with leading crucible steel concerns for a number of years.

Just before he retired, on June 1, John McConnell, who was superintendent of the Tennessee Coal, Iron & Railroad Company's steel plant at Ensley, Ala., made a special record. The open hearth department in May made 15,615 tons of steel, the billet yard shipping 13,500 tons of rolled product.

The Iron Age

New York, Thursday, June 12, 1902.

DAVID WILLIAMS COMPANY,	-	-	-	-	-	-	PUBLISHERS.
CHARLES KIRCHHOFF,	-	-	-	-	-	-	EDITOR.
GEO. W. COPE,	-	-	-	-	-	-	ASSOCIATE EDITOR.
RICHARD R. WILLIAMS,	-	-	-	-	-	-	HARDWARE EDITOR.
JOHN S. KING,	-	-	-	-	-	-	BUSINESS MANAGER.

The Strike Epidemic.

Labor troubles are increasing in number and importance. The forebodings of those who expected developments of this character are thus being verified. The indications of uneasiness on the part of labor early in the year were regarded as too significant to be misunderstood. Nevertheless, many experienced business men permitted themselves to be deluded by the belief that the strikes of this year would be neither serious nor numerous. They probably reasoned that too many of the recent strikes had resulted unfavorably to labor to warrant any extensive disturbance to occur at this time, or that workingmen were too generally employed at good wages to feel sufficiently discontented to strike in any great number. When the anthracite coal miners' strike was threatened the expressions of the oversanguine had far more weight with the public than the positive utterances of the leaders of the miners. Hence that strike came as a surprise to the business world generally. It is entering upon its fifth week, with no more hope of an early ending than that based upon an investigation of the causes leading up to the strike by the United States Commissioner of Labor.

We now have troubles with the machinists in several localities, the strike of the puddlers in Eastern Pennsylvania, the stoppage of work by the melters in crucible steel works and, of course, more or less controversy with molders in scattered localities. The strike of the blast furnacemen in Ohio and Western Pennsylvania, although of short duration, was of greater extent than had been anticipated. The teamsters' strike in Chicago, settled last week, was a sudden outbreak which was far more serious in its consequences than could possibly have been foreseen. This week we have the strike of the coal miners in Virginia and West Virginia as an additional cause of uneasiness in manufacturing circles. A street railway strike is in progress in Providence, and a very extensive one in Chicago was last week barely averted. It is to be hoped that all the labor troubles now progressing will be settled before any more develop to distract business interests. The air, however, seems to be charged with portentous indications in this direction, and it would not be surprising if more and more labor troubles should break out before the epidemic has run its course.

All strikes are, of course, detrimental to the general welfare, but those of the coal miners are particularly injurious, as they affect the interests of so large a part of the population of this country throughout many States. We find at this time the strike of the anthracite coal miners interfering seriously not only with manufacturing industries in the eastern section of the country, but also with the comfort and convenience of the people at large. They are suffering from annoyances caused by the scarcity of anthracite coal, which are far greater than had been anticipated. The interference with manufactures has not been so great as it might have been, inasmuch as bituminous coal has been substituted as far as possible for anthracite and thus the

works have been kept in operation. The scarcity of anthracite has caused several blast furnaces to be banked or blown out which were running on special grades of pig iron, and this brings considerable inconvenience to a section of the iron trade at a time when such a heavy demand for iron exists that any restriction of the supply is immediately felt. We are now, however, confronted with the possibility of a diminution in the supply of bituminous coal, caused by the extension of the miners' strike to the soft coal regions. This may prove a most serious matter, as both manufacturing and transportation interests may be greatly affected. It is to be hoped that the strike of the soft coal miners is not so extensive as indicated in some of the reports and that it will not spread to the more important mining districts of Western Pennsylvania.

The number and importance of the labor troubles now in progress prove most impressively the futility of all efforts by economical organizations or philanthropic individuals to bring about better relations between employers and workingmen. It seems inevitable that a conflict of interests resulting in a strike must develop at some time. In periods of depression strikes are caused by reductions in wages or by the enforcement of regulations designed to increase output or lower the cost of production. But in times like these they are caused by the aggressions of labor organizations, either seeking a greater share of the presumptive large profits or aiming at a reduction in the service to be rendered for the wages paid. But whatever may be the cause, no effective means has yet presented itself for a speedy settlement. Employers brook no outside interference, as they very properly claim that those not directly interested are not sufficiently qualified to judge fairly the merits of the issue involved. Workingmen, on the other hand, usually express themselves in favor of arbitration, as they know that arbitration in the great majority of cases means a compromise, thus giving them some advantage from which they can hope to attain further gains in the future. A most deplorable development of modern strikes in great industries is the complete breakdown of civil authority whenever employers attempt to continue their operations in defiance of their striking workmen. Few cities or communities can be found in this country in which the ordinary authorities are strong enough to protect life or to insure the liberty of an individual when a strike is in progress. Yet, in the words of Kipling, it seems that we must simply "muddle" along, hoping that something will happen to bring about a better state of affairs.

The Independent Lake Ore Mines.

Human nature is the same the world over. When conditions arise that do not conform to the ideas of certain portions of the people arguments against those conditions and reasons for changing them are easily found, and these are always along the line of least resistance—in line with the wishes of the class complaining. In the iron ore mining districts of Lake Superior the people opposed to corporate existence and growth have for years argued that the great mining and transportation interests in Minnesota have ground out the independent miners. They claim that this is accomplished either by excessive transportation charges on the shipment of independent ores, or that it is done by selling the product of the "trust" mines at cost, relying on the freight charge to secure a profit on the ore when once finally delivered at lower lake docks. By independent miner is meant one who is obliged to actually

pay the quoted freight charge to a railway in which he has no ownership, as opposed to the miner whose ownership of the railway or the steamship hauling his ore gives him back the profit in transportation on whatever ore is hauled. The situation was such for some years that these arguments seemed to have some weight, and this, with their constant reiteration, caused them to be generally accepted throughout the State. They formed the basis of political documents and were overworked during campaigns.

When all the various combined transportation and mining interests in Minnesota were united, about a year ago, into the United States Steel Corporation, the tender solicitude of these people for the independent miner was one of the touching incidents of the period. If not already doomed his time was come then, and numberless obituaries were read, all based upon the greed of the combination, and coupled with the text of *Carthago delenda est!* It is curious to note what has happened since.

With no change in rates, with no improvement of the situation through the one existing competing line of ore road from the Mesaba range, with a lower price for ore than prevailed two years ago, with a more complete control of the ore mining and transportation and iron making situation than ever before, there are this season a dozen new active independent mines on the Mesaba range, and more mines are coming as fast as they can be whipped into shape for operation. One might think that all these mines were opened for outside steel making interests, who see that their salvation lies in getting as close as possible to the raw material, who, if they cannot build railroads and control transportation, can mine ore and save the mining profit. But these mines are not all being opened by steel makers. Some are owned by concerns that have absolutely no outside connections of any nature, either in transportation or in furnaces. That enough of these are willing to enter the field to plainly show that the business appeals to many men is positive proof that the old assertions and arguments were absolutely without sufficient foundation. It was merely the times that gave them what small corroboration they ever had. It will probably be a long time before the large steel and transportation interest is again held up to public hatred and vituperation as the death blow of all independent effort in either finding mines or operating them.

The Crop Situation.

Seldom, if ever, has the crop situation been more uniformly favorable than at present. Both major and minor agricultural crops give promise of a satisfactory yield, and as these are the basis of prosperity in commercial and manufacturing lines, the fact is especially gratifying and especially noteworthy. The Government report, issued on Tuesday, giving the conditions of wheat and other cereals on June 1, shows the following averages: Winter wheat, 76, as compared with 87.8 on June 1, 1901, and 80.3 the mean of June averages for ten years; spring wheat, 95.4, against 92 at the corresponding date last year and 92.6 the mean for ten years; oats, 90.6, against 85.3 on June 1 last year and 90 the ten-year average; barley, 93.6, against the ten-year average of 88.6; rye, 88.1, against 89.3, the ten-year average.

For the moment winter wheat and cotton occupy the most prominent place in the business mind in estimating the probable course of trade, but the satisfactory condition of the other growing crops is scarcely less remarkable, although of less importance at this time of the season. In the winter wheat belt an abundance of

moisture was the most conspicuous feature of the week; indeed, for several days there was some apprehension that too much rain would undo the benefit which relief from the drought in May had occasioned. The harvest is about to begin in Kansas, hence the solicitude caused by the reports of floods in bottom lands, damage by rust and wheat lodging. It was such conditions that caused "shorts" to reduce their lines in the markets during the week. But damage news was of a sporadic nature and, in general, the result of the week's developments was to slightly improve the prospects of the winter wheat, now rapidly nearing maturity. Reports from abroad are less generally favorable, but the little change noted will have little effect upon the aggregate foreign yield, the prospect being almost certain of a world's crop considerably above the average of recent years.

From the South comes the news that cotton is maintaining the high condition indicated by the Government June report—95.1. Only twice in 21 years has the condition of the staple been as high as on June 1 this year; in 1887 the Bureau reported 96.9 and in 1896 97.2. At the corresponding time a year ago the condition of the crop was estimated at 81.5 and during the last ten years the average condition has been 86. The Government statistician has estimated the total area planted at about three-tenths of 1 per cent. less than the acreage planted last year, which would indicate an acreage this year of 27,450,000. But the Agricultural Department has adjusted its estimate in conformity with the findings of the Census Bureau, which has resulted in the addition of about 418,000 acres to the area planted last year, indicating the area planted to cotton for 1902-1903 as about 27,878,000 acres, being about 72,000 acres less than the revised area for 1901-1902. It is interesting to note that for once, at least, the Government is in harmony with the trade in its estimates both in the South and East. The latest mail advices from the cotton belt report the outlook brilliant.

The situation in the corn belt is satisfactory; the warmer weather of the last week has largely repaired the damage caused by the unseasonably cold weather of the preceding week in Ohio and Indiana, but cultivation has been retarded in the Western States by the heavy rains, which have given growth to weeds.

CORRESPONDENCE.

Pioneer Manufacturers of Large Chain.

To the Editor: The paragraph on page 22 of *The Iron Age* of May 29, entitled "Pioneer Manufacturers of Large Chain," does us an injustice and considerable injury. The article which appeared in your issue of May 22 was furnished by us and the paragraph in the issue of May 29 directly reflects on our veracity. We therefore request that you give us space for the following observations on that article:

1. On May 22 we stated that the Lebanon Chain Company are the pioneers in this country in making very large chain. This is a fact, and we believe they are the only concern who have made 33-16-inch chain and successfully tested it under Lloyd's requirements. We challenge Bradlee & Co. or any one else to mention another manufacturer who has made chain this size and tested it.

2. We stated that our machine and the Boston machine were the only two successful machines of this size in the country. We still claim that this is strictly true. To call a machine a 305-ton machine does not make it such. Our machine, as illustrated, is as sensitive at 600,000 pounds, its nominal capacity, as at one-half or one-fourth that load, while it is a notorious fact that other large machines in this country are weak and sluggish long before their rated capacity is reached. Of Bradlee & Co.'s two machines, one is a Riehle 300,000-pound machine, strengthened by Olsen & Co. It

is not of the Olsen type, and it is not fair to call it an Olsen machine. We shall be pleased to enter the Lebanon machine in a competitive test with Bradlee & Co.'s machines or any other machines in the country.

3. In regard to the last paragraph—that is, our statement that 33 triplets were broken in 1½ hours—we beg to say that this is perfectly consistent with the action of the machine ever since it has been in use. We have seen this machine making these tests and know that it can do as represented. If desired, we can arrange for a demonstration of this point by actual test. The quick action that we have devised for this machine is one of the most notable improvements made in hydraulic testing machines, and cannot be fully appreciated until it is seen in operation. It more than doubles the capacity of the machine, and we believe this machine is four or five times as fast as the old machines. When a man asserts that such rapid work is a "physical impossibility," he simply exposes his ignorance of first-class hydraulic practice.

In conclusion, we desire to again assert that our statements in the original article are strictly in accordance with the facts, and we are prepared to demonstrate their truth if desired.

PHILADELPHIA MACHINE TOOL COMPANY.

PHILADELPHIA, June 6, 1902.

American Competition in Neutral Markets.

To the Editor: In the "Notes from Great Britain" in your valuable paper of the 15th inst., your correspondent states that "In a way Englishmen cannot quite understand, the Americans and Germans are securing a firm grip upon markets of which Great Britain had complete possession."

It is quite true that markets which were entirely possessed by us until the last few years have now been taken from us by your countrymen and by Germany. But there is no ignorance of the causes which, in the majority of instances, have brought this about. To give a concrete example, which is worth reams of explanation, the following market reports will tell their own tale:

Melbourne, April 12th ult.—American quotations f.o.b. New York, annealed drawn varnished fence wire £6 10s. 8d. per ton (clearly a long ton to suit that market).

Pittsburgh, April 11.—Shortage of steel still continues. Wire rods, \$36 per (short) ton.* This is equal to £8 7s. 3d. per long ton.

Your issue under notice reports the continued shortage of steel in the United States. Thus rods have advanced another \$1 a ton since April 12, and all wire has also advanced so that, e.g., barb fence galvanized is being sold in carloads at the high figure of \$2.90 per 100 pounds, Pittsburgh, and in smaller than car lots at \$3.10 per 100 pounds. Translate the former into long tons and sterling, and it equals 13 shilling 6 pence per hundredweight, or £13 10s. per long ton, which your home consumers are called upon to pay for galvanized barb wire.

I have before me, however, a quotation from your great company, dated May 26, of £10 7s. 6d. for a parcel of 90 tons, f.o.b. New York, to be shipped abroad. You will perceive that your citizens subscribe through your tariff to give the foreigner his fence wire at \$9 per ton less than the price of the raw material, and his barb wire for 30 per cent. less than they can buy it at themselves, at the same time that they secure to the manufacturer his home profit on the transaction.

In like manner our German competitors, having an "export bonification" of 10 marks per ton, freight rates to ports by their State railways irrespective of distance, and shipping subsidies to all their foreign lines (equal in the Nord Deutscher Lloyd to 7 per cent. on the total capital of that company), are making a bad second to your lead. For while your enormous natural wealth provides you with the means to carry off any economic experiments you may be minded to, Germany, a poor country, has gone a long way toward ruining herself in attempting to follow you.

* Our correspondent is in error here. Wire rods are quoted on the long ton basis—namely, 2240 pounds.—EDITOR THE IRON AGE.

Ex uno disce omne. These are fair examples of the cause of your success in capturing our markets. It can be imitated by anybody with a long enough purse, but more satisfactorily when it can be so arranged that the community which pays for your losses never gets any of the profits. Yours faithfully,

WARRINGTON, ENGLAND, May 30, 1902.

A Big Contract for Iron Castings.

Our readers are aware that the Pennsylvania and Long Island railroads are working on a plan for tunneling both the East and Hudson rivers and establishing a mammoth depot at Thirty-third street, New York. The necessary property has been acquired during the past two or three years, and all legislation, city and State, has been accomplished. A nominal sum has been fixed for the right of tunneling under the New York portion of the Hudson River, this being done that the privilege should not be acquired without some recompense. A precedent is thus established which will influence future undertakings of like character. In the city proper the company pay a fee of 50 cents per year per foot of track (both main and side) for the first ten years and \$1 per foot for the next 15 years. It is estimated that there will be at least 12 miles of track under the surface, so that the franchise for the first ten years will cost over \$30,000 annually.

A subsidiary company will construct the river tunnels and also the tunnel in the city. This is the Pennsylvania, New York & Long Island Railroad Company, with headquarters in the Astor Court Building, New York. In an engineering aspect the work is divided into two parts, that under the Hudson being in charge of Charles W. Jacobs as chief engineer and that under the East River in charge of Alfred Noble, chief engineer.

As the Hudson River section is through silt or soft material the shield method of tunneling will be adopted. In this process a steel shield of the same diameter as the tunnel proper is shoved forward into the heading by jacks. The rim of the shield forms a cutting shoe, and its face is formed into small compartments in which the men work in excavating the material. The whole is constructed upon the diving bell principle, by which the air is confined and the water excluded.

As the shield progresses cast iron plates will be inserted in the form of a ring or casing encircling the entire excavation. These rings are flanged so as to permit their being bolted one to another, and the joints will be broken or zigzagged. No other lining will be used. Bids have been received for some 30,000 tons of these plates, but as the contract has not as yet been awarded we are not at liberty to give either the price or successful bidder.

The United States Coal & Coke Company.

The United States Coal & Coke Company, a subsidiary interest of the United States Steel Corporation, have been organized and will develop the Pocahontas coal fields in West Virginia, taken over some time ago by the Steel Corporation. It is the intention to build in the Pocahontas coal fields 3000 coke ovens of the beehive type. Contracts for 950 of these ovens have been given to Bennett & Weakland, and they are to be completed by June 1, 1903. Three mines will be opened, work on which has already been started. The mines are located on the line of the Norfolk & Western Railroad. The motive power for the operation of the mines, cars and tipples will be electricity. Plans for the building of an electric power plant are now being drawn. A club house is also to be built for the use of officials and 300 dwelling houses to be occupied as homes by the miners. It is the intention of the United States Coal & Coke Company to not only make coke to be used by constituent interests of the United States Steel Corporation, but also to sell coal in the open market as well. Much of the work in developing this coal field will be under the supervision of Thomas Lynch, president of the H. C. Frick Coke Company and subsidiary coke companies of the United States Steel Corporation.

OBITUARY.

EDWARD FLATHER.

Edward Flather, who died at his residence, Bridgeport, Conn., on April 7, was born at Bradford, England, July 1, 1839, and was the son of Mark and Helen Hodgson Flather, being one of five brothers. Last June he contracted a severe cold, which settled in the bronchial tubes and finally developed into asthma and heart trouble. Although being in ill health his death was not expected, as he was able to be about and attend to and direct the many enterprises in which he held large interests. The day he died he had been about the city, and upon his return was suddenly seized with an attack of labored breathing and before a physician could be summoned had expired.

Mr. Flather was a natural born mechanic. His ability in this line was illustrated in his boyhood days, and as he advanced in years he became one of our prominent mechanics, making the systematic manufacture of implements and tools a study, and inventing machines



EDWARD FLATHER.

whereby the manufacture of sewing machines and guns was greatly expedited. These machines have not been displaced and are now in use by the many manufacturers of these tools. He also remodeled and invented important mechanical movements, now being used in sewing machines and guns, on which he obtained letters patent.

Mr. Flather came to this country in 1856 at the age of 16 years, commencing his career at Harper's Ferry in the employ of the United States Government Arsenal, and retaining this position until he became associated with the A. B. Howe Sewing Machine Company of New York City. The United States Government, from previous relations with Mr. Flather, and their desire to obtain the best mechanics, again employed him during the rebellion as inspector of fire arms at Colt's Armory, in Hartford, Conn. By reason of his aptness and ingenuity and in order that the Government might receive the benefit of his knowledge in a more extended way, he was transferred to Yonkers, N. Y., and made inspector of fire arms and ammunition at the Stars arms factory. After most creditably filling this position, he accepted flattering inducements to associate himself with the Joe-

lyn Fire Arms Company, at Stonington, Conn. He next became identified with the Elias Howe Sewing Machine Company of Bridgeport, Conn., and had large contracts for the manufacture of their sewing machines. In the conduct of his contracts he invented and had built many new machines and tools, by the introduction of which in the fulfillment of his contracts he greatly reduced the cost of the manufacture of the sewing machine. He also invented parts and remodeled the machine in many respects. The Elias Howe Sewing Machine Company, noting his ability, immediately selected him as the person they desired as general superintendent, and urged Mr. Flather to accept this position. He held this position for 18 years.

In 1866 Mr. Flather, with his brothers, Joseph and William, started the Flather Machine Company and the Flather Foundry Company of Nashua, N. H., they being among the pioneers of lathe manufacturers.

W. C. WATERBURY.

The death of Walton C. Waterbury, which occurred at his home at La Grange, Ill., on May 29, removes from the Chicago iron trade one of its most esteemed members. He was 44 years old and was born in Lapeer, Mich. In 1889 he became connected with Rogers, Brown & Merwin of Chicago, first as stenographer and subsequently as salesman. Applying himself diligently to the discharge of his duties, he developed a special aptitude for the pig iron business, and speedily won favor among the customers of the house. In 1892 he took a position as salesman with Forster, Backman & Hawes, then sales agents for the Iroquois Furnace Company. This firm were soon after changed to Forster, Hawes & Co., and in 1896 again changed, becoming Forster, Waterbury & Co. In 1899 the sales agency for Iroquois iron was terminated by the purchase of the furnace property by Rogers, Brown & Co. and others associated with them, and Forster, Waterbury & Co. turned their attention to the manufacture of malleable castings, erecting a large foundry at Franklin Park, a Chicago suburb. In 1900 ill health caused Mr. Waterbury to retire from active participation in business. Early in the present year, although suffering from the ravages of consumption, his indomitable energy impelled him again to become identified with the iron trade, and he secured a position as salesman with David Evans, Chicago manager of the Sloss-Sheffield Steel & Iron Company. A widow and two children survive him.

NOTES.

ERNEST W. GOURD of Quincy, Mass., died in that city on June 5. He invented many machines used in the manufacture of knit goods. He was born in New York, May 12, 1842, and served in the Union Army during the Civil War. He was aboard the "Congress" when that vessel was destroyed by the Confederate ram "Merrimac" in Hampton Roads, Va. Two sons survive him.

THOMAS W. BROWN, proprietor of the Standard Company, Boston, Mass., died at his home in Belmont, Mass., a short time since. Mr. Brown was about 70 years of age, and had been engaged in the manufacture of egg beaters for upward of 30 years. He was of a mechanical turn of mind and the inventor of many patented articles.

A New Blast Furnace at Canal Dover.—The Penn Iron & Coal Company of Canal Dover, Ohio, have increased their capital stock from \$200,000 to \$500,000. The additional capital will be used in building a new blast furnace, which will be erected on the site of the present one; also a system of structural steel bins and trestles and steel bridge over the ore yard and operated by electricity. The present blast furnace will be blown out in a few weeks, when it will be torn down to make room for the new stack, which will be 85 x 20 feet, with a daily capacity of 400 tons of pig iron.

S. B. Schlesinger, who retired from the firm of Naylor & Co. in 1886, after having long been a conspicuous figure in the iron trade, is now visiting this country.

The Baird Machinery Company.

The Baird Machinery Company of Pittsburgh have been granted a Pennsylvania charter, with a capital of \$200,000, and will take over the entire business of the U. Baird Machinery Company of that city, dealers in iron and wood working machinery and machinists' supplies. Members of the old firm have been elected officials in the new corporation as follows: H. A. Reed, president; C. A. Wolfe, vice-president; O. P. Meckel, secretary. The above, with W. B. Wolfe and J. L. McCartney, constitute the Board of Directors. The business of the Baird Machinery Company was established in Pittsburgh many years ago by Urtiles Baird and in 1883 was acquired by the U. Baird Machinery Company. The business has grown very rapidly, and at the present time the Baird Machinery Company occupy a three-story building extending from Water street to First avenue, in Pittsburgh, and also occupy a very large warehouse at Twenty-fifth street and Liberty avenue, in that city, which is used for storage for machine tools exclusively. The Baird Machinery Company are exclusive agents in Pittsburgh and vicinity of the following well-known machinery manufacturers: Brown & Sharpe Mfg. Company, Providence, R. I.; Prentice Brothers Company, Worcester, Mass.; Hendy Machine Company, Torrington, Conn.; New Haven Mfg. Company, New Haven, Conn.; Gould & Eberhardt, Newark, N. J.; P. Blaisdell & Co., Worcester, Mass.; Draper Machine Tool Company, Worcester, Mass.; B. F. Sturtevant Company, Boston, Mass.; Acme Machinery Company, Cleveland, Ohio; Warner & Swasey, Cleveland, Ohio; Fosdick & Holloway Machine Tool Company, Cincinnati, Ohio; J. A. Fay & Egan Company, Cincinnati, Ohio; Morse Twist Drill & Machine Company, New Bedford, Mass.; Lidgerwood Mfg. Company, New York; Diamond Machine Company, Providence, R. I.; Woodward & Powell Planer Company, Worcester, Mass., and the Flather Planer Company, Nashua, N. H. The Baird Machinery Company have recently taken some large orders for iron and wood working machinery, among these being contracts for the entire machinery equipment of the new works of the Sharon Foundry Company, Sharon, Pa.; Kenney & Co., Scottsdale, Pa., and American Turret Lathe Mfg. Company, Warren, Pa. The concern also have other large orders and regard the outlook for business in the machinery line this year as being exceptionally bright.

Enormous Lake Superior Traffic.

DULUTH, MINN., June 7, 1902.—With a traffic in iron ore from all lake ports for the season to June 1 amounting to 5,158,000 tons, Lake Superior passed out 3,980,000 tons. But there were loaded at Lake Superior docks 300,000 tons more than this, which amount figures in the total first given. So that of the total movement of ore to June 1, 4,280,000 tons were from Lake Superior and 960,000 tons from Escanaba.

The Sault canals report for June makes a tremendous showing of upper lake traffic for this year to date. The figures below present the total and chief items of business for May, for 1902 to date, and comparisons with a few preceding years. The total business for 1901 was 28,400,000 tons, which this season promises to exceed by a considerable amount.

Item.	May, 1902.	Season to June.			
		1902.	1900.	1898.	1896.
Total tons.	4,425,659	6,764,893	4,565,879	3,872,347	2,746,825
Iron ore..	2,648,450	3,980,450	2,619,320	1,629,090	1,200,000
Lumber...	142	177	120	122	111
Copper...	14,311	13,780	19,423	26,790	25,085
Coal.....	689,908	1,037,166	880,040	638,830	473,654
Grain	10,584,679	21,855,676	16,599,522	14,549,588	18,554,752
Flour.....	913,034	1,570,438	1,194,073	1,419,270	1,029,916

Iron ore in gross tons, lumber in million feet, copper and coal in tons, grain in bushels, flour in barrels.

The decline in copper shipments is more apparent than real, for the reason that all winter rail shipments are now the rule. The great preponderance of iron ore is shown by these figures.

It is interesting to note that in 1902, to June 1, Lake Superior traffic exceeds that of any year up to 1889, and that it also exceeds the gross business of the lake for all years prior to 1878.

D. E. W.

PERSONAL.

W. C. Allison has resigned his position as general manager of the Niles Car & Mfg. Company, at Niles, Ohio. He will continue as a director of the company.

John F. Ward, district vice-president of the Amalgamated Association, at Youngstown, Ohio, has resigned. Mr. Ward has been appointed deputy factory inspector for the Youngstown district.

A. S. White, formerly traffic manager of the American Steel Hoop Company in Pittsburgh, has been appointed general agent of the Mexican Central Railroad and the Interoceanic Railway of Mexico, with headquarters in St. Louis.

John A. Walker, vice-president of the Jos. Dixon Crucible Company of Jersey City, N. J., sails for Europe on the "Kaiser Wilhelm der Grosse" on June 17. He expects to be gone about six weeks.

Robert Hoesch of the Eisen-und-Stahlwerk Hoesch, Dortmund, Germany, is now in this country.

W. Seward Webb has resigned as a director of the Cramp Steel Company, Limited, of Ontario.

Alexander C. Humphreys of the firm of Humphreys & Glasgow, New York and London, has been elected president of the Stevens Institute of Technology, Hoboken, N. J., in succession to the late Dr. Henry Morton.

William B. Dickson of the United States Steel Corporation has agreed to build a casino in the new library at Swissvale, near Pittsburgh, for the erection of which Andrew Carnegie contributed \$25,000. The casino, as planned by Mr. Dickson, will cost about \$25,000.

Increase in the World's Copper Production.

In the annual statistics of the world's principal copper supplies issued by Henry R. Merton & Co., Limited, of London, a general increase of production abroad is noted for 1901, while in this country a slight decline is shown. The latter can be accounted for by the curtailment of operations due to litigation and to accidents. The total increase for 1901 above 1900 was 26,092 tons. In the matter of increase Canada is foremost, with 10,300 tons beyond the figures of the year previous. Australia increased almost 8000 tons and Chile went 4300 tons higher than in 1900. Practically all other producing countries increased with the exception of the United States, where a decrease of 1317 tons is noted. The table shows that in this country there was a 1000-ton reduction in the case of Calumet & Hecla, but other lake producers gained 2899 tons. The Montana district lost 8787 tons, and Arizona gained 4803 tons. Other States lost 1292 tons, as compared with the year previous.

Below we give a summary of the table showing the totals for the last three years:

	In tons of 2240 pounds.		
	1901.	1900.	1899.
United States.....	267,410	268,787	262,206
Canada	18,800	8,500	6,730
Spain and Portugal.....	53,621	52,872	52,168
Chile	30,000	25,700	25,000
Japan	27,475	27,840	28,310
Germany	21,720	20,410	23,460
Mexico	23,795	22,050	19,335
Australia	30,875	23,000	20,750
Cape of Good Hope.....	6,400	6,720	6,490
Russia	8,000	8,000	7,210
All other countries.....	24,030	22,160	20,351
Totals.....	512,131	486,039	472,244

The figures for the United States should be received with reserve, since they are not official.

The fire loss of the United States and Canada in the month of May, as compiled from the records of the New York Journal of Commerce, shows a total of \$14,866,000, as compared with \$13,894,000 in the preceding month and \$22,380,000 in May, 1901, which last sum was swollen by the Jacksonville conflagration. The total fire loss for the five months ended May 31 is placed at \$76,860,500, which is about \$2,500,000 less than in the corresponding period of 1901 and \$5,000,000 less than 1900.

Pig Iron Production Temporarily Reduced.

The troubles in the Shenango and Mahoning valleys led to the banking and blowing out of a number of furnaces in the last days of May and on the first day of June, so that the furnace capacity active on entering the current month was temporarily reduced quite sharply. This is reflected in our monthly returns. Since then the majority of the furnaces have resumed work, so that probably production is now proceeding at quite the normal rate of over 1,500,000 tons per month.

Our statistics show that the May output was 1,570,243 gross tons, the month having 31 days.

The weekly capacity of the furnaces in blast on June 1 compares as follows with that of the preceding periods:

	Total capacity per week. Gross tons.	Coke capacity per week. Gross tons.	Charcoal capacity per week. Gross tons.
June 1, 1902.....	344,748	337,492	7,256
May 1.....	352,064	345,627	6,437
April 1.....	337,424	331,140	6,284
March 1.....	323,028	316,039	6,989
February 1.....	332,045	325,440	6,605
January 1.....	298,460	291,992	6,468
December 1, 1901.....	324,761	317,358	7,403
November 1.....	320,824	313,775	7,049
October 1.....	307,982	300,538	7,444
September 1.....	299,861	293,256	6,605
August 1.....	303,847	297,269	6,578
July 1.....	310,950	303,793	7,157
June 1.....	314,505	306,991	7,514
May 1.....	301,125	293,915	7,210
April 1.....	296,676	288,766	7,910
March 1.....	292,899	284,825	8,074
February 1.....	278,258	278,258	8,335
January 1.....	250,351	243,254	7,097
December 1, 1900.....	228,846	222,067	6,779
November 1.....	215,304	207,381	7,923
October 1.....	223,169	214,921	8,248
September 1.....	231,778	223,551	8,227
August 1.....	244,426	236,131	8,295
July 1.....	283,413	274,921	8,492
June 1.....	296,376	288,771	7,605
May 1.....	293,850	286,956	6,894
April 1.....	289,482	281,644	7,838
March 1.....	292,643	285,596	7,047

The status of the anthracite and coke furnaces was as follows on June 1:

Coke and Anthracite Furnaces in Blast, June 1.

Location of furnaces.	Total No. of stacks.	Number in blast.	Capacity per week.
New York.....	14	6	6,041
New Jersey.....	6	4	3,957
Spiegel.....	3	3	482
Pennsylvania:			
Lehigh Valley.....	28	20	12,038
Spiegel.....	1	1	128
Schuylkill Valley.....	14	13	10,820
Lower Susquehanna.....	10	6	5,715
Lebanon Valley.....	12	10	7,247
Pittsburgh District.....	34	33	82,076
Shenango Valley.....	18	13	21,995
Western Pennsylvania.....	21	16	20,186
Maryland.....	5	4	6,050
Wheeling District.....	10	10	15,782
Ohio:			
Mahoning Valley.....	15	10	20,920
Central and Northern.....	14	14	25,702
Hocking Valley.....	3	2	881
Hanging Rock.....	13	10	5,975
Illinois.....	18	16	32,281
Spiegel.....	1	1	905
Minnesota.....	1	..	..
Wisconsin.....	5	5	5,373
Missouri.....	1	1	722
Colorado.....	3	3	4,395
The South:			
Virginia.....	23	18	11,006
Kentucky.....	7	5	2,057
Alabama.....	40	31	26,855
Tennessee.....	16	13	7,894
Georgia.....	1	..	..
North Carolina.....	1	..	..
Totals.....	338	268	337,492

There were blown in during May one Poughkeepsie in New York, Pequest in New Jersey, one Swede and one Warwick in the Schuylkill Valley, New Castle No. 2 in the Shenango Valley, Saxton in Western Pennsylvania, Mingo in the Wheeling district, the second Lorain

in the Cleveland district, one De Bardeleben in Alabama, Victoria and Shenandoah in Virginia and Helen and one Rockwood in Tennessee.

There were out or banked on June 1 a number of furnaces, some of which have resumed since. This is particularly true of the Mahoning and Shenango Valleys. In the latter there were out or banked Claire, Mabel, Hall and Sharpville, and in the former Grace, Hannah, Haselton and Tod. The furnaces of the Republic Iron & Steel Company, in the two valleys, Hall, Hannah and Haselton have since resumed. There were blown out for repairs in May furnace A of the Niagara Company, one Crane and one Hokendauqua in the Lehigh Valley, Lawrence in the Hanging Rock region, Calumet in Illinois and one Crozer in Virginia.

The production of pig iron, month for month, since the beginning of the year has been as follows:

Monthly Production of Anthracite and Coke Pig Iron.—Gross Tons.

	January, 1902.	February, 1902.	March, 1902.	April, 1902.	May, 1902.
New York.....	31,357	28,726	31,609	29,802	23,895
New Jersey.....	16,144	13,263	19,860	19,593	19,358
Schuylkill Val..	35,618	36,826	39,009	40,153	42,161
Lehigh Valley..	50,164	40,216	41,690	51,943	58,486
Upper and Lower Susquehanna and Lebanon...	57,611	47,311	46,963	58,126	58,286
Pittsburgh.....	357,326	317,522	351,841	350,421	361,343
Shenango Valley	108,513	89,014	102,551	105,933	116,273
Western Penn..	85,151	69,048	83,856	83,220	89,395
Maryland, Virginia and Kentucky.....	68,340	66,882	79,947	83,728	79,275
Wheeling Dist..	59,807	45,304	50,136	63,821	69,890
Cent. and Northern Ohio.....	81,663	69,133	83,214	96,576	113,822
Mahoning Val..	142,067	118,723	145,511	121,324	128,445
H'nging Rock and Hocking Valley	32,463	29,171	32,127	31,045	31,856
Illinois, Wisconsin, Missouri and Colorado.....	160,386	163,402	199,635	198,436	196,734
Alabama.....	110,103	95,673	115,929	114,355	118,922
Tennessee.....	30,960	27,396	31,137	26,979	32,960

Total coke pig.....1,427,673 1,257,610 1,445,587 1,475,455 1,541,101
Production charcoal pig..... 28,969 28,207 27,836 27,871 29,142

The status of the charcoal furnaces was as follows:

Charcoal Furnaces in Blast June 1, 1902.

Location of furnaces.	Total No. of stacks.	Number in blast.	Capacity per week.
New England.....	7	4	195
New York.....	3	3	705
Pennsylvania.....	5	3	154
Maryland.....	1	1	140
Virginia.....	3	0	0
Ohio.....	9	2	70
Kentucky.....	3	0	0
Tennessee.....	1	1	69
Georgia.....	4	2	676
Alabama.....	4	3	1,109
Michigan, Missouri and Wisconsin.....	10	8	4,038
Oregon.....	1	1	100
Texas.....	4	0	0
Totals.....	55	28	7,256

There were started in May, Lime Rock in Connecticut, Copake in New York, Greenwood and Glen Iron in Pennsylvania, Olive in Ohio, Sligo in Missouri, and Shelby No. 2 in Alabama. Attalla was blown out on May 8.

Furnace Stocks.

The position of furnace stocks, sold and unsold, as reported to us, was as below on June 1, as compared with the five preceding months, the same furnaces being represented as in former months. This does not include the holdings of the steel works producing their own iron: Stocks.

	Jan. 1.	Feb. 1.	Mar. 1.	Apr. 1.	May 1.	June 1.
Anthracite and Coke.....	179,993	121,762	96,315	69,974	63,583	51,939
Charcoal.....	38,091	32,438	29,030	23,289	20,276	10,677
Totals.....	218,084	154,200	125,348	93,263	83,859	62,616

The sharp decline in the stocks of charcoal iron is noticeable.

Edmund C. Converse, who has been in Japan for several weeks, has returned, having arrived in New York on Wednesday, June 11.

MANUFACTURING.

Iron and Steel.

Pioneer Furnace, No. 3, the new furnace of the Republic Iron & Steel Company, at Thomas, Ala., and one of the largest and most modern in the South, was blown in June 9. The stack is 85 feet high, 18½ feet in bosh, with a 12-foot hearth, and will have a daily capacity of from 250 to 300 tons of pig iron. The equipment consists of four Massick & Crooke's hot blast stoves, 22 feet in diameter and 85 feet high, eight Wheeler boilers of 400 horse-power each, two cross compound steple type blowing engines with high and low pressure and having a stroke of 60 inches. The bed plates of the engines weigh 66 tons each. The fly wheels are 24 feet in diameter, each weighing about 50 tons. The total weight of each engine is about 350 tons. The pumping station has a Wheeler condenser with wet and dry vacuum pump, and two compound duplex plunger pumps to feed the boilers. An electric plant is also provided to furnish light and power. The electrical system is used in loading charging cars and carrying them to the top of the furnace.

The Western Steel Car & Foundry Company, who were incorporated early in May with a capital stock of \$1,250,000, a majority of which is owned by the Pressed Steel Car Company, last week took possession of the Hegewisch plant of the Illinois Car & Equipment Company of Chicago. Within a few hours after the transfer of the property had been completed part of the plant was destroyed by fire. The loss is considerable, but is fully covered by insurance. It was the intention of the company to make a number of improvements to the plant, but since the fire has occurred these will be changed to practically a reconstruction, and the damaged portion will be rebuilt and equipped on a much larger scale. The company will manufacture wooden cars with steel frames, and the capacity, which was formerly about 30 cars per day, will be doubled. The plant will also become the Western repair shops of the Pressed Steel Car Company.

At Pittsburgh the Pennsylvania Trust Company have been appointed trustee of the Hussey Steel Company, which went into bankruptcy last April. The liabilities are \$64,650.46 and the assets \$50,072.66.

Brown & Co., Incorporated, operating the Wayne Iron & Steel Works in Pittsburgh, signed the Amalgamated Association scale last week, subject to any final changes that may be made.

The Indianapolis Tin Company, Indianapolis, Ind., have been organized with a capital of \$50,000, for the purpose of manufacturing and selling tin plate, tin cans and all kinds of tinware. Following are the Board of Directors of the new company: Grafton Johnson, Edmund T. Shubrick and James B. Nelson.

At the plant of the Youngstown Iron Sheet & Tube Company, Youngstown, Ohio, the 52-inch sheet mill has been put into operation. This makes six mills in all, the 38-inch mill having started up some time ago. The company expect to operate 16 sheet mills, but work on some of these will be deferred until the tube mills are completed, which will be some time next month.

The Colonial Steel Company of Pittsburgh have in the main mill building of their plant at Colonia, Pa., three bar mills, four sheet mills and the blooming train, and the first of these was put in operation about two weeks ago. Work on the balance of this plant is progressing rapidly and the company expect to have all their mills in operation early in July. They have started the work of enlarging their crucible equipment, which will just double their present capacity. They report a very large demand for their Colonial special tool steel.

The American Tube & Stamping Company, Bridgeport, Conn., have acquired a site of several acres with rail and water facilities for their proposed new steel billet mill and open hearth plant. It is understood that ground will be broken for the erection of the plant at an early date.

The Hollidaysburg Iron & Nail Company, Hollidaysburg, Pa., will start at once upon the erection of their new rolling mill, 100 x 200 feet. The building will be located on the railroad tracks, just east of the present plant, and will contain besides a modern rolling mill several finishing mills. When the new mill is completed the old one will be used entirely as the puddling department.

The plant to be built by the Franklin Rolling Mill & Foundry Company, at Franklin, Pa., and for which S. Diescher & Sons, Hamilton Building, Pittsburgh, are drawing the plans, will manufacture special shapes of steel telegraph poles and malleable iron castings instead of steel castings, as stated.

The new plate mill being built by the Continental Iron Company, at Wheatland, Pa., is nearly finished, and is expected to be started up early in July.

The plant at Findlay, Ohio, formerly occupied by the Kellogg Weldless Tube Company, and later by the Heckert-Balsley Billet Company, was sold at auction last week. The property was sold to satisfy a claim held by the Stilson, Hutchins & Kehoe Company, and it brought \$60,000. It is stated the buildings will probably be torn down for the material therein.

The report that Follansbee Brothers Company, tin plate manufacturers, of Pittsburgh, had decided to locate their pro-

posed new plant at Clarksburg, W. Va., is incorrect. They have been figuring for some time on the building of a plant to contain about four sheet mills and the same number of tin mills, but the exact location of the plant has not been determined. It will probably be built somewhere in the Pittsburgh district.

The partnership agreement of Marland, Neely & Co., Limited, at Pittsburgh, manufacturers of nuts, bolts, washers and wire nails, expires on July 1 next. Their plant and business will be purchased by the Neely Nut & Bolt Company, a corporation now in process of formation. The officials of the new company will be the same as in the old firm, and consist of Edwin Blindley, chairman, and Thomas Neely, secretary and treasurer. It is the intention to make considerable improvements at the works, which are to be located on the South Side, Pittsburgh, and the capacity will be very much increased. It is probable they will take up the manufacture of rivets.

The Jackson Iron & Tin Plate Company have started up their plant at Clarksburg, W. Va., and advise us they are turning out about 70 tons of finished product per day. T. M. Jackson is president, C. C. Moore general manager and W. I. Grove secretary and treasurer.

The Republic Iron & Steel Company intend to make further improvements at their Brown-Bonnell Works, at Youngstown, Ohio. It is probable several more continuous finishing mills will be built at this plant.

The American Steel & Wire Company forwarded last month, via Eastern seaboard ports, nearly 7500 tons of wire and wire nails to various foreign countries. Australia, South Africa, Europe, China and Japan were the principal customers.

Over 3000 tons of iron pipe were exported last month via Eastern ports by the National Tube Company, being an increase of nearly 50 per cent. as compared with the company's exports made during April. Europe was the most important purchaser, 2016 tons having been shipped there.

General Machinery.

Armstrong Bros. Tool Company, Chicago, announce that they have completed the re-equipment of their plant, having entirely recovered from the confusion and delay incidental to the fire from which they suffered recently. They have largely increased their facilities and are now in better shape than before to take care of a rapidly increasing business. About 30,000 square feet of floor space and an ample equipment of up to date machinery are now devoted to the manufacture of the Armstrong tool holders.

The Carlin Machinery & Supply Company, Allegheny, Pa., are just in receipt of five carloads of new lathes, engines and boilers. To facilitate delivery of derricks, they laid in a stock of about 80,000 feet of Oregon fir, which has come into more general use for this purpose owing to its being stronger, longer grained and more lasting than the white pine formerly used in this section.

The Westinghouse Electric & Mfg. Company of Pittsburgh have received a contract for the machinery for the electric lighting plant to be installed in the 24-story Farmers' Deposit Bank Building, to be erected on the corner of Fifth avenue and Wood street, Pittsburgh.

The Lewis H. Dodge Company, Boston, Mass., recently organized, have opened a shop at 148 Purchase street, for the manufacture of special machine screws, binding posts, studs, rolls, &c., using principally automatic machines. Most of the equipment has been purchased. The officers are: John Merrill, president; Lewis H. Dodge, formerly with the Dodge Machine Screw Company, now in liquidation, vice-president and general manager, and E. T. Redmond, treasurer.

Stevenson Brothers & Co., St. Cloud, Minn., have been succeeded by the Aetna Iron Works, recently incorporated, with a capital stock of \$25,000. The new company will do a general foundry and machine business, and manufacture agricultural machinery.

The City of Allegheny, Pa., has awarded a contract to the Snow Pump Company for two pumps, each with a daily capacity of 15,000,000 gallons, the contract price being \$223,000.

The Allis-Chalmers Company of Milwaukee, Wis., have received a contract through their Pittsburgh office for furnishing a pump to the city of Allegheny with a daily capacity of 5,000,000 gallons of water, the contract price being \$37,000.

The Robinson Machine Company, Monongahela, Pa., whose foundry and machine shops were destroyed by fire recently, advise us that they are about to rebuild and will soon be in operation again. In the meantime they are distributing their work among various foundries and machine shops and filling their contracts as usual.

The Hayden-Corbett Chain Company of Columbus have been incorporated with \$100,000 capital stock, by John W. Hayes, J. D. Price, W. H. Andrews, H. C. Goodman, W. C. Orr, W. H. Hayden and others of Columbus. Officers have been elected as follows: W. C. Brown, president; W. S. Hanna, vice-president; John W. Doges, treasurer; W. H. Hayden, secretary; John T. Corbett, general manager. The company will commence work at once on two buildings, each 300 x 50 feet, of brick and steel. They will install about 100 forges which will give them an output of from 300 to 400 tons of finished chain of all kinds per month. The plant will be equipped with the latest and most

improved machinery and they will utilize new machinery that has never been heretofore used in the manufacture of chain. J. F. Corbett, general manager of the company, has for the past 17 years been employed as assistant and superintendent of the chain department of the P. Hayden Saddlery Hardware Company and the Standard Chain Company of Columbus.

It is the intention of the Atlas Gun Company of North Ilion, N. Y., to either enlarge the present plant or build a new one in some other place. With their present facilities they are unable to meet the demands of their increasing business.

The Columbus, New Albany & Johnstown Traction Company, Columbus, Ohio, will erect a repair shop and car barns at Rarig. Machinery will be installed for repairing equipment.

The Portsmouth Veneer Works of Portsmouth, Ohio, will erect an addition to double their capacity. New machinery will be installed.

Citizens of Kenton, Ohio, have voted favorably on a proposition to bond the village to the amount of \$50,000, to be used in retaining the plant of the Champion Iron Works, whose works were burned down a short time ago. Other cities offered bonuses, but the company decided to remain in Kenton if the town would give a bonus of \$50,000. Plans for a new plant double the capacity of the old have already been prepared, and work will start at once.

The Structural Steel Car Company of Canton, Ohio, who are erecting a large plant in that city, are preparing to erect additional buildings to double its size, as soon as the first shops are completed. As originally planned the shops were to have a capacity of from 20 to 25 cars per day, but orders have already been booked for 1253 cars, or enough to keep the shops busy for a year and a half. The company are also considering the erection of a blast furnace and a steel plant for the production of their own material.

The Springfield Machine Tool Company of Springfield recently made a considerable shipment of tools to foreign markets. The tools went to Stockholm, Cologne, Brussels, Paris, Berlin and Melbourne.

The Bosworth-Holding Company of Cleveland have recently been formed by W. H. Bosworth and H. H. Holding, both well known in the machinery trade in that section. They have opened warerooms at 26 Merwin street, and will handle new and second-hand machine tools, dynamos, motors, engines, boilers and electrical appliances. They will act as Cleveland agents for the C. & C. Electric Company, the Helois-Uton Company, the Griffith & Wedge Company, the Mansfield Engineering Company, the Gem City Boiler Company, and Thomas Carlin's Sons Company. They recently sold five carloads of second-hand blast furnace machinery to parties in Mexico City.

The W. J. Brewer Engineering Company, Washington, D. C., have incorporated for the purpose of manufacturing patent self-contained, slow motion, power saving, anti-friction devices for all rotary journals. For the present they will confine themselves to the assembling of the different parts in a well equipped shop, recently secured, and will purchase their castings and drop forgings in the open market.

Boilers, Engines, &c.

The Bradford Gas Engine Company, Bradford, Pa., and the Flickinger Iron Works of Cochranton, Pa., have been consolidated and will hereafter be known as the Flickinger Iron Works. The plant at Cochranton will be abandoned, and in the future all of the work of the company will be done in Bradford. The buildings will be enlarged and the present output doubled.

The Phoenix Iron Works, Meadville, Pa., have received a contract for one 450 horse-power and one 400 horse-power engine, to be installed in the Farmers' Bank Building now being erected in Pittsburgh.

The Camp Engineering Company, 47 West Lake street, Chicago, Ill., rebuilders of second-hand engines, report business for May beyond all expectations and the prospects for June exceedingly bright. Recent shipments include 150 horse-power Armington & Sims engine to La Salle, Ill.; 75 horse-power Corliss engine and two heaters of 350 and 100 horse-power to Sault Ste. Marie, Ont.; 18½ x 24 inch mine pump to Galena, Kan.; 500 horse-power Deane Jet condenser to Indianapolis, Ind.; 100 horse-power Porter-Allen engine to Chicago, and numerous pieces of other small machinery.

Recent sales of the engineering department of the Pittsburgh Gage & Supply Company, Pittsburgh, include two 350 horse-power water tube boilers, with stokers and coal conveying apparatus, for the Montrose pumping plant, Allegheny City, Pa.; eight stokers for the Allegheny City lighting plant; a 1000 horse-power Patterson-Berryman water heater for the Whipple Colliery Company, and a 125 horse-power P.-B. water heater for the Lake Erie Limestone Company.

The William Tod Company, Youngstown, Ohio, have received an order from the Youngstown Mfg. Company for a tandem engine 24 x 44 x 48 inch stroke.

The McNeil Boiler Company of Akron have elected officers as follows: George A. Kemple, president; B. L. Dodge, vice-president; J. H. Miller, secretary. The above, with H. F. Cook and F. H. Adams, are directors. B. Campbell will be general manager of the plant. The company succeed the company of similar name who failed some time ago.

The Miller Gas Engine Company of Springfield, Ohio, have about completed the buildings for their new plant and are expecting the receipt of their machine tool equipment ordered some time ago.

The Kenton Cracker Company, Kenton, Ohio, will enlarge their plant. A power house will be built and machinery will be operated by electricity.

The Sterling & Skinner Mfg. Company, Detroit, Mich., recently organized with a capital stock of \$25,000 for the manufacture of brass goods for steam, water and gas, are erecting a two-story brick factory 50 x 100 feet, which will be equipped with latest improved machinery, an 80 horse-power engine, and a 100 horse-power boiler. It is expected that the plant will be ready for operation by July. The officers are R. R. Sterling, president; E. J. Roney, vice-president; F. G. Skinner, secretary and treasurer, and J. F. McDougall, superintendent.

The John Davis Company, steam fitters' supplies, Chicago, Ill., who have been located at 75 Michigan street for a number of years, will erect a plant, costing \$200,000, at Twenty-second and Halsted streets, and upon completion will transfer their business to the new location. The works will comprise a warehouse at the southeast corner, four stories high, with ground dimensions of 167 x 256 feet; several buildings, including machine shops, power house and sheds, will occupy a frontage of 250 feet on Twenty-second street, and 570 feet on Union street. Next this property, but separated from it by an 18-foot driveway, a large warehouse will be erected for Burley & Tyrrell. It will be five stories high, of mill construction, and will cost about \$90,000.

Plans have been prepared for the expenditure of between \$5,000.00 and \$6,000,000 on improvements to the United States Military Academy, at West Point, N. Y., work on which will be started as soon as the necessary appropriation will have been made. Among the contemplated improvements with estimated cost, prepared by Col. Charles W. Larned of the Academy, are a central power station, \$1,146,000; new pumping station and stand tower, \$10,000; modern fuel gas plant, \$60,000, and steam heating plant, \$25,000.

The Renfrew Company, Adams, Mass., are installing six new 6-foot boilers at their mill and are making some minor improvements in the dye house.

Foundries.

The Steele & Robinson Company, who have recently been incorporated at Williamsport, Pa., with a capital of \$50,000, will remodel the plant formerly used for making the Backus Heater to suit their business. They will engage in the manufacture of gray iron castings, radiators and steam and hot water heaters, and expect to employ 50 men. George P. Steele has been elected president and general manager, and will have charge of the business and reside in Williamsport. William J. Robinson is the secretary and treasurer and will have charge of the office and salesroom in Philadelphia.

The Nazareth Foundry & Machine Company, Nazareth, Pa., have recently increased their capital stock to \$50,000 for the purpose of extending the equipment. They have just completed a 40-foot addition to the foundry, making the main building 40 x 180 feet. There are also two ells and a building used as a smith shop and for storage. They are installing a 6-ton hand crane and a new core oven, 10 x 16 feet, in the foundry, and a 36 x 42 x 10 Cincinnati planer in the machine shop, furnished by W. E. Shipley of Philadelphia.

It is reported that a new steel casting plant will be erected at Matthews, Ind. Charles Clifton of Matthews is said to be at the head of the project.

It is announced that the Paxton & Vierling Iron Works are preparing to close down manufacturing operations at Omaha and transfer the business from that point to the firm of Vierling & McDowell of Chicago. The present trouble with the molders is stated to be the direct cause of the move, and it is claimed in addition that conditions have not been satisfactory at any of the Omaha foundries or iron works for some time, owing to the fact that Chicago and Kansas City firms have been able to do work at a considerably less cost than the local plants.

The Abbott Electric & Mfg. Company, formerly of Cleveland, and at present of Warren, Ohio, have changed their name to the United States Brass & Mfg. Company. The company have just completed the installation of a brass furnace in their foundry.

The American Foundry & Machine Company, Hanover, Pa., are now and have been very busy in their new shop, which they occupied April 1. They have since erected an addition for their brass foundry department. Their Glenville plant, 12 miles from Hanover, is also running fully. Prospects are very bright for continuance of work till end of year at both establishments. The great bulk of work being done is making high grade heavy castings.

The Springfield Foundry Company of Springfield, Ohio, are doing an exceptionally large business, and they are planning to double the capacity of their plant to meet the demands of the increasing trade.

The Medina Foundry Company of Medina, Ohio, have been incorporated with \$15,000 capital stock by F. O. Phillips, Arthur Van Epp, H. C. Bradway, C. C. Engel and Blake McDowell. They have purchased a foundry in that place and will enlarge it for the manufacture of stove castings.

The Zanesville Malleable Iron Company of Zanesville, Ohio, have completed plans for their new plant for the production of malleable castings. A large L shaped building will be erected. The foundry room will be 120 x 200 feet, the engine room and machine shop 80 x 110 feet, office 30 x 50 feet, and annealing room 80 x 106 feet. The annealing room will contain six annealing ovens arranged in tiers and this part of the building will be 40 feet high. The plant will be located in the southern part of the city along the Muskingum River, affording river shipping in addition to spurs from the Baltimore & Ohio and Pennsylvania lines. The plant will be in operation within 60 days.

Bridges and Buildings.

The Pressed Steel Tank Company, Milwaukee, Wis., recently incorporated with a capital stock of \$100,000 by Robert H. Hackney, Frank G. Bigelow and George C. Markham, have purchased the entire plant, equipment, accounts and business of the Seamless Structural Company.

The Columbia Iron Works have established a modernly equipped architectural and structural iron shop at 723-729 Reading road, Cincinnati, Ohio. The firm consist of Robert E. Sweeney and George A. Van Hagel.

The County Commissioners at Findlay, Ohio, have awarded a contract for a steel bridge over the Blanchard River to the Adams Brothers Bridge Company of Findlay, whose bid was \$15,500. Other bidders were the Brackett Bridge Company and the Huston & Cleveland Bridge Company, Cincinnati; the King Bridge Company and the Variety Iron Works, Cleveland.

Fires.

The Oliver Iron & Steel Company, Pittsburgh, Pa., suffered a \$25,000 loss by fire at their plant June 10.

The table works of Robert F. Whitmer of Philadelphia, at Keyser, W. Va., were destroyed by fire June 6. The loss is about \$75,000.

The storage department of the Gendron Iron Wheel Company and the pattern works of the Vulcan Iron Works Company of Toledo were damaged by fire a few days ago; the former to the amount of about \$10,000 and the latter to the extent of about \$35,000, both fully insured.

Fire did \$10,000 damage to the foundry and machine shop of Davis, Printz & Co., Reading, Pa., last week. The loss is fully covered by insurance.

Hardware.

At a meeting of the stockholders of the Angle Steel Sled Company, Kalamazoo, Mich., held recently, George Bardeen was elected president, H. G. M. Howard vice-president, Sam Dunkley secretary, Parke Burdick general manager and Dr. O. A. La Crone treasurer. The company have not secured a factory building yet, but have options on several suitable locations. The company have received advance orders for several thousand sleds, and they are anxious to begin operations. H. G. M. Howard is the patentee of the sled, which is of steel construction and very light, strong and durable.

The New Freedom Wire Cloth Company, New Freedom, Pa., have within a short time made shipments of their wire cloth to 20 States and Territories. They have also made shipments to Cuba, Porto Rico and Honolulu, as well as to Scotland, British Columbia, Canada, Mexico, India and Australia.

The Emmert Mfg. Company, Waynesboro, Pa., who commenced to manufacture the Universal pattern makers' vise in January, 1901, have had a rapidly increasing business. Since that time they have made several additions to their plant, but demand has now increased to such an extent that they have commenced to erect another building, which they hope to have finished and machinery installed by August 1. It will be 90 x 90 feet in dimensions, and will be equally divided between the machine and wood working departments. Recent orders received include 15 for San Francisco, 21 for Canada and 12 for England.

Union Saw Company of New Jersey, Camden, N. J., manufacturers of the Union saw blades and hack saws, are now making the Rival saw blade, which is referred to as very flexible and special adapted for brass workers' and plumbers' use, tube cutting and cutting of all soft metals. The company advise us that they have had a number of inquiries from Great Britain for their blades, both Union and Rival, and the sample orders which have been filled have resulted in opening up a good business in that country.

W. & D. Mogy of Bayonne, N. J., who manufacture telescopes for astronomical research, have added a new building to their plant, which is to be used for making their new form of telescope. This new instrument, it is stated, has great light grasping value, and is intended to view celestial bodies and objects that give off very little light or are poorly illuminated.

The Helwig Mfg. Company of St. Paul, Minn., have found it necessary to add additional machinery to their present equipment to meet the constantly increasing orders, both domestic and foreign, for their pneumatic and other devices.

Miscellaneous.

S. R. Dresser, Bradford, Pa., manufacturer of oil and gas well packers, &c., is building an addition to his plant to be used as a warehouse.

The Pfander Vacuum Fermentation Company of Rochester,

N. Y., manufacturers of glass enamel lined steel tanks, have acquired a 17-acre site in that city upon which they will erect a new plant, the buildings of which will cover six or seven acres and will cost between \$200,000 and \$250,000. Plans are now being prepared, and as soon as they are completed work of construction will be begun. The company do their principal manufacturing in two plants, at Detroit, Mich., and it is their intention to concentrate their business at Rochester, as soon as the new plant is ready for occupancy.

Stockholders of the Barney & Smith Company, Dayton, Ohio, will vote on June 1 on a proposition to reduce the capital stock from \$5,000,000 to \$3,500,000.

The Gibson Iron Works, Gibson City, Ill., are erecting a new office building and a new testing room with improved facilities for handling their Exeter radiator, which they have made for several years for steam and hot water.

Biersach & Niedermeyer, Milwaukee, Wis., manufacturers of metallic fire proof windows, have been incorporated under the name of the Biersach & Niedermeyer Company. The officers are: Louis D. Biersach, president; August Niedermeyer, vice-president and treasurer, and Paul L. Biersach, secretary.

The Hollar Saving Vault Company of Philadelphia are installing a new armor plate vault for the Union Savings Bank in the Frick Building, Pittsburgh. The same concern are putting in a large safe deposit vault in the same building. It will have 1600 boxes, and will be made of armor plate of the Harveyized process.

The Blackburn Improvement Company, Blackburn, Okla., recently incorporated with a capital stock of \$10,000, will install a telephone system and erect an electric light plant, the power for which they already have. The officers are: M. M. Rhodes, president; W. E. Brady, first vice-president; John Landes, second vice-president; G. H. Schults, secretary, and Frank Landes, treasurer.

The Mississippi Foundry & Machine Company, Jackson, Miss., have increased their capital stock from \$20,000 to \$30,000 for the purpose of extending their farm implement business.

The natural gas well which the Keystone Driller Company of Beaver Falls, Pa., struck on their property recently, has a rock pressure of 265 pounds. The well furnishes enough gas to run three large engines and a large boiler in the plant of the above concern, who operate some steam hammers without diminishing the pressure of the well. The well makes 60 pounds of gas in one minute.

The Cannon Metal Wheel Works of Pontiac, Mich., have purchased 20 acres of land near the city limits, and will erect a factory. Machinery has already been purchased.

The Hoosier Equipment Company of Richmond, Ind., have been incorporated with a capital stock of \$10,000. The following have been elected directors: Henry A. Christy, John A. S. Graves and Richard A. Jackson.

The new steel coal cars of the Baltimore & Ohio Railroad now being built by the Pressed Steel Car Company of Pittsburgh will have a capacity of 100,000 pounds. The gondola cars, with sides, will have a capacity of 80,000 pounds.

The Southern Sewer Pipe Company, Chalfoux Building, Birmingham, Ala., will shortly be in the market for an electric light outfit, tank and fire protection equipment and belt power elevator. The company are erecting a large terra cotta sewer pipe plant at North Birmingham, consisting of a main building, 61 x 301 feet, three stories, of frame construction, with single story addition, 40 x 96 feet, and a brick and iron power house, 40 feet square, in which will be installed a 250 horse-power Corliss engine and four 100 horse-power boilers, which have been purchased. The special machinery was purchased from Taplin, Rice & Co. of Akron, Ohio. The plant will include 20 30-foot down draft kilns and will have a capacity of 100 cars per month.

The Florida Paper Company, Pensacola, Fla., will probably remove their mill to Orange, Texas, where new buildings will be erected.

The Caldwell Mining Car Company of Caldwell, Ohio, will commence work at once on their new factory. The company have incorporated with \$100,000 capital stock.

The Ohio Brass Company of Mansfield, Ohio, have been incorporated under the laws of New Jersey with a capital stock of \$1,000,000. The incorporators are Charles K. King, Harry S. Black, George S. Lucas, Reid Carpenter, E. T. Cook and Frank R. Black, all of Mansfield. The company will increase their facilities for manufacturing brass goods and electric railway supplies.

The contract for the cement and lumber for the new Michigan Buggy Company's plant at Kalamazoo has been placed. Other bids are at present being considered for the construction of the plant, and it is expected that the letting of the contract will be but a matter of a few days. The Grand Rapids & Indiana Railroad have laid side tracks to the factory site.

F. Bredel of Milwaukee has completed plans for a new gas producing plant for the village of Painesville, Ohio. Work will start at once under the direction of Mr. Bredel. The plant will cost about \$25,000.

The Weldon & Kelly Company of Pittsburgh have received a contract for all the plumbing for the 24-story Farmers' Deposit Bank Building now being built in Pittsburgh.

The Iron and Metal Trades.

Our monthly blast furnace statistics this time reflect, as they should, the special conditions which prevailed on the 1st instant, through the temporary banking of a number of stacks in the Shenango and Mahoning valleys, the majority of which have since resumed. The result is that the capacity of the Coke furnaces in operation was only 337,492 tons June 1, as compared with 345,627 tons on May 1. It is probable, however, that the output of the current month will be up to the 1,500,000-ton mark. It reached 1,570,243 tons in May, a month of 31 days.

From the West come reports of some buying of Foundry Iron for 1903 delivery, but, on the whole, melters of Iron seem disposed to await developments. Spot Iron continues exceedingly scarce, and higher and higher prices are being paid for it.

Importations are continuing of Low Phosphorus Iron, both Eastern Pennsylvania and the Pittsburgh district having taken round lots.

The domestic production of Manganiferous material is at a low ebb and the bulk of our consumption is now covered by importations. Among the recent purchases by one Steel plant are 15,000 tons of Spiegeleisen.

Steel is scarce, and it looks as though we shall have to import for some time to come. Some round lots of Sheet Bars for the Central West and of Billets for Eastern Pennsylvania were placed during the week.

One point has not been as clearly brought out as it should be, and that is that the volume of orders on the books for Finished Iron and Steel varies very greatly in the different branches. In the heavy lines, notably in Steel Rails, Beams, Structural Material and Plates, the mills could run full to the end of the year and in some lines well toward the middle of next year in order to deliver all that they have sold. In Steel Rails they will certainly carry considerable work due in 1902 into 1903. They are now selling quite liberally for 1903 delivery, considerable additional sales having been made in the last week. The same is true in an even more pronounced degree of Structural Material, and largely, too, of Plates, although the outlook for shipbuilding in 1903 is not particularly rosy just now. How enormous has been the demand for Structural Material is shown by the fact that the contracts closed in May by the American Bridge Company aggregated 70,000 tons.

The employment of the Bar mills takes them well into the fall. It is different, however, with the Tin Plate mills, with the Tube mills, the Wire works and the Sheet mills, few of which have full employment beyond the summer months. This is, of course, due partly to the fact that business is never placed beyond the season in the midst of which we are now and partly due to the circumstance that there are many newcomers in these fields, which leads buyers to hold back.

Prospects for the future, however, are apparently bright. A leading Wire interest recently sent a letter of inquiry to over 500 merchants throughout the whole country. The responses are almost unanimous in pronouncing the outlook for a very heavy fall trade exceptionally good.

An interesting contract closed last week was for 30,000 tons of Iron Castings for the lining of the tunnel under the Hudson River. The Bethlehem Steel Company took the order.

A Comparison of Prices.

At date, one month and one year previous.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

June 11, June 4, May 14, June 12,
1902. 1902. 1902. 1901.

PIG IRON:

Foundry Pig No. 2, Standard, Philadelphia	\$20.50	\$19.75	\$19.75	\$15.00
Foundry Pig No. 2, Southern, Cincinnati	19.75	19.25	18.75	13.50
Foundry Pig No. 2, Local, Chicago	21.50	21.50	21.00	15.00
Bessemer Pig, Pittsburgh	21.75	21.50	21.00	16.00
Gray Forge, Pittsburgh	20.00	19.75	19.75	14.00
Lake Superior Charcoal, Chicago	23.00	23.00	23.00	17.00

BILLETS, RAILS, ETC.:

Steel Billets, Pittsburgh	32.25	32.25	32.00	24.50
Steel Billets, Philadelphia .....	.....	.....	33.50	27.00
Steel Billets, Chicago .....	.....	.....	.....	.....
Wire Rods, Pittsburgh	37.00	37.00	37.00	39.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
Spikes, Tidewater	2.00	2.00	2.00	1.80
Splice Bars, Tidewater	1.80	1.75	1.60	1.40

OLD MATERIAL:

O. Steel Rails, Chicago	19.00	19.00	17.50	13.00
O. Steel Rails, Philadelphia	21.00	21.00	21.00	15.75
O. Iron Rails, Chicago	24.00	24.00	24.00	18.50
O. Iron Rails, Philadelphia	24.50	24.50	24.00	19.00
O. Car Wheels, Chicago	20.50	20.50	20.00	16.50
O. Car Wheels, Philadelphia	19.50	19.50	19.50	17.50
Heavy Steel Scrap, Chicago	19.00	19.00	17.50	13.00

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia	2.00	2.05	1.95	1.55
Common Iron Bars, Chicago	1.75	1.75	1.90	1.55
Common Iron Bars, Pittsburgh	1.80	1.80	1.80	1.45
Steel Bars, Tidewater	1.90	1.90	1.80	1.62½
Steel Bars, Pittsburgh (official)	1.60	1.60	1.60	1.40
Tank Plates, Tidewater	2.00	2.00	1.95	1.75
Tank Plates, Pittsburgh (official)	1.60	1.60	1.60	1.60
Beams, Tidewater	2.00	2.00	2.00	1.75
Beams, Pittsburgh (official)	1.60	1.60	1.60	1.60
Angles, Tidewater	2.00	2.00	2.00	1.75
Angles, Pittsburgh (official)	1.60	1.60	1.60	1.60
Skelp, Grooved Iron, Pittsburgh	2.15	2.25	2.25	1.80
Skelp, Sheared Iron, Pittsburgh	2.35	2.35	2.25	1.85
Sheets, No. 27, Pittsburgh	2.90	2.95	2.95	3.20
Barb Wire, f.o.b. Pittsburgh	2.90	2.90	2.90	2.90
Wire Nails, f.o.b. Pittsburgh	2.05	2.05	2.05	2.30
Cut Nails, Mill	2.05	2.05	2.05	2.00

METALS:

Copper, New York	12.25	12.40	12.12½	17.00
Spelter, St. Louis	4.65	4.55	4.15	3.80
Lead, New York	4.10	4.10	4.10	4.37½
Lead, St. Louis	4.00	4.00	4.00	4.30
Tin, New York	30.50	29.65	29.90	28.75
Antimony, Hallett, New York	8.00	8.00	8.00	8.75
Nickel, New York	50.00	50.00	50.00	60.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York	4.19	4.19	4.19	4.19

Chicago.

FISHER BUILDING, June 11, 1902.—(By Telegraph.)

The demand from heavy consumers of Pig Iron for a larger tonnage than usual for delivery extending into the first five and six months of next year has been the feature of the local Pig Iron market during the week. The banking of furnaces in the East and Southeast, incidental to labor strikes, is convincing the melters of Pig Iron that the present basis of prices will probably be maintained for some time in the future. Those who have been holding off anticipating lower prices from the blowing in of new stacks are experiencing a change of sentiment. High premiums are still being obtained on Iron for early delivery and for the last quarter of the year. Prices continue to harden. Furnaces are asking about 50c. per ton less for the first six months of next year, but the buyer takes the risk of an advance in freight rates, which seems to be sure to come. Scrap Iron is scarce and high. A number of Bar Iron mills will close down for repairs about July 10. With the exception of Iron Bars, Steel Hoops and Wire Nails, new business for which is not heavy, there is continued activity and even urgency throughout the market for all Iron and Steel products. Further large contracts for Steel Rails for 1903 delivery are pending, with the probability that before the end of the current week orders will have been placed for 150,000 to 200,000 tons. Track Supplies

are also active and strong with higher prices obtained. There is still a good demand for foreign material, with sales during the week of 3000 tons of Billets and 2000 tons of Beams for delivery in October, November and in July, respectively.

Pig Iron.—The principal feature of the Pig Iron market during the week has been the entrance of large buyers seeking the placing of contracts extending into the first six months of 1903. Agricultural implement manufacturers have probably been the largest purchasers; stove works and general jobbing foundries have also been among the buyers. The largest individual contracts, however, have not been over from 5000 to 10,000 tons and even to secure this amount several furnaces have contributed. The strikes at the furnaces and mines in Pennsylvania and at mines in the Pocahontas and New River districts are responsible for an increased demand for Pig Iron in the West. Eastern buyers having made urgent inquiries in this section recently. For prompt delivery premiums of 50c. to \$1 per ton are still obtained on outside quotations on both Southern and Northern Iron. Northern makes are especially scarce. For delivery extending into the first half of next year some furnaces are quoting 50c. per ton under the asking prices for the last quarter of this year; other makers, however, refuse to offer anything for sale, but in any case where quotations are made for next year the buyer must assume the risk of advancing freight rates, which seem not only probable, but almost certain. The aggregate volume of business during the week has been larger than for some time, and while some sales have been made for June, July and August, the bulk of business has been for October, November and December shipment, with the probability that the next few days will witness some important contracts beginning the last quarter and extending into June, 1903. An interesting feature of the week has been the evidence accumulated that a number of large consumers have been melting heavily and will not consent to the extension of deliveries on contracts, which was suggested by selling agents. The deliveries to be made in June and July are exceedingly heavy and as some foundries are in sore need of Iron, some of the consumers, who have been forehanded enough and fortunate enough to have more than their immediate needs, were asked to allow a delay of delivery in favor of those less favorably situated. With the exception of two, however, all buyers demanded the fulfillment of contracts to the letter, stocks in consumers' hands being light. We quote as follows:

Lake Superior Charcoal.....	\$23.00 to \$24.00
Local Coke Foundry, No. 1.....	22.50 to 23.00
Local Coke Foundry, No. 2.....	21.50 to 22.00
Local Coke Foundry, No. 3.....	21.00 to 21.50
Local Scotch, No. 1.....	22.00 to 23.00
Ohio Strong Softeners, No. 1.....	24.00 to 24.50
Southern Silvery, according to Silicon.....	21.15 to 21.65
Southern Coke, No. 1.....	21.65 to 22.15
Southern Coke, No. 2.....	21.15 to 21.65
Southern Coke, No. 3.....	21.15 to 21.65
Southern Coke, No. 1 Soft.....	21.65 to 22.15
Southern Coke, No. 2 Soft.....	21.15 to 21.65
Foundry Forge.....	19.65 to 20.15
Southern Gray Forge.....	19.65 to 20.15
Southern Mottled.....	19.65 to 20.15
Southern Charcoal Softeners, according to Silicon.....	18.65 to 19.15
Alabama and Georgia Car Wheel.....	23.00 to 24.00
Malleable Bessemer.....	22.00 to 22.50
Standard Bessemer.....	23.00 to 24.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	23.10 to 24.10

Bars.—The one new feature in the market is that many of the mills making Bar Iron will close down for repairs on July 10 or earlier. The market for Iron Bars is still somewhat unsettled, few of the smaller independent mills being willing to take business at prices now current for Steel Bars, while the larger companies are still holding at 2c. to 2.10c., and taking business only upon the merits of each individual contract, considering quantity, buyer and time of delivery. One or two large contracts for Steel Bars for belated buyers were placed during the week, and the demand for small quantities has continued quite liberal, both from mill and from store. Bar Iron is quotable at 1.75c. to 1.90c., Hoops at 2.15c. to 2.25c., Angles at 2.25c., base, mill shipment. The jobbing demand has continued active with full prices, and in some cases liberal premiums are

obtained. Soft Steel Bars are quotable at 2.25c., Angles at 2.50c., Hoops at 2.50c., base, from store.

Structural Material.—There continues to be a fair demand for moderate amounts, with occasional contracts for 1000 to 3000 tons for next year's delivery placed on the basis of previous quotations. There is still a demand for foreign material, 2000 tons of Beams having been sold during the week at 2c. for delivery in July forward. The jobbing trade is limited only by small available supplies, and for several sizes very large premiums over quoted prices are obtained. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 1.75c. to 1.85c. Small lots of Beams and Channels from local yards are quoted at 2.50c. to 3.50c.; Angles, 2.50c. to 3.50c. rates; Tees, 2.55c. to 3.50c. rates.

Plates.—Notwithstanding the strong tone the market has further hardened, with a liberal volume of business both from mill and store. Premiums of \$5 to \$7 per ton over the association prices are obtained in a small way. Mill prices are as follows: Tank Plate, ¼-inch and heavier, 1.75c. to 2.25c.; Flange, 1.85c. to 2.35c.; Marine, 1.95c. to 2.50c. The following are the prices asked from store, the inside prices being to large consumers only: Tank Steel, ¼-inch and heavier, 2c. to 2.40c.; Tank Steel, No. 8, 2.15c. to 2.50c.; Flange Steel, 2.10c. to 2.60c., all f.o.b. warehouse, Chicago.

Sheets.—A firmer tone has developed, with a fair volume of business, premiums of \$2 per ton being paid in a small way over the combination prices. Mill shipments of No. 27 Black Sheets are quoted at 3.15c. to 3.25c., Chicago, and small lots from store at 3.45c. to 3.55c. Galvanized Sheets are quoted at net prices, mill shipments being held on the basis of 4.35c. to 4.50c., Chicago, and small lots from store at 4.70c. to 4.75c. for No. 27.

Cast Pipe.—Notwithstanding the high prices prevailing there has been an increased volume of business in moderate amounts, orders coming from both water and gas companies and one sale of 2500 tons, small sizes, fours and sixes, has been made for shipment to the Pacific Coast. Cast Iron Water Pipe is quoted by manufacturers as follows: 4-inch, \$34; 6-inch, \$32; 8-inch and upward, \$31; Gas Pipe, \$1 per ton higher than Water, f.o.b. Chicago.

Merchant Pipe.—Few changes have been noted, with a fair demand and steady prices. Carloads are quoted as follows, random lengths: Black, ½ to ½ inch, 56½ off; ¾ to 12 inches, 63½ off; Galvanized, ½ to ½ inch, 43½ off; ¾ to 12 inches, 50½ off.

Boiler Tubes.—There has been a more active demand for Tubes, and the market has continued strong without change in quotations, which for mill shipment are as follows:

	Steel.	Iron.
1 to 1½ inches.....	42½	39
1½ to 2½ inches.....	55½	38
2½ to 5 inches.....	61	48
6 inches and larger.....	55½	38

The prices from store are as follows:

	Steel.	Iron.
1 to 1½ inches.....	35	35
1½ to 2½ inches.....	47½	32½
2½ to 5 inches.....	55	42½
6 inches and larger.....	47½	..

Merchant Steel.—There has been less pressure from buyers during the week, but this is probably due rather to difficulty of placing orders than to any decrease in the demand from consumers. A large mill reports the shipments in May the largest of any May in its history. Mill shipments are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.95c. to 2.10c.; Open Hearth Spring Steel, 2.65c. to 2.75c.; Toe Calk, 2.25c. to 2.40c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 50 off in carload lots. Ordinary grades of Crucible Tool Steel are quoted at 7c. for mill shipments; specials, 12c. upward.

Rails and Track Supplies.—Large contracts are the order of the day, several hundred thousand tons pending in the East and West, but few important contracts have been closed during the week. Among the sales, however,

have been 6000 tons of Heavy Sections, first quality, and from 3000 to 4000 tons ditto, second quality, on the basis of \$28 and \$27 respectively. Light Sections are selling all the way from \$35 to \$40 per ton, according to weight and time of delivery. Track Supplies have been in very active demand, with further liberal sales made, and higher prices have prevailed for Spikes and Nuts. Fastenings are quoted in carload lots: Splice Bars or Angle Bars, 2c.; Spikes, 2.40c. to 2.50c.; Track Bolts, with Hexagon Nuts, 3.10c. to 3.45c.; Square Nuts, 2.95c. to 3.10c.

Billets.—The active and urgent demand for domestic Billets has continued, with few obtainable even for long deliveries. Sales have been confined to a few hundred ton lots. Foreign Billets have continued in good demand, and while liberal amounts are pending only moderate sales have been consummated, among them being 3000 tons Bessemer Billets on the basis of about \$32, Chicago, for October and November delivery. Domestic Open Hearth Billets are selling at \$38 to \$42, Chicago, according to the analysis, time of delivery and responsibility of buyer.

Old Material.—The offerings of all kinds of Old Material are light and the market is firm, all offerings finding ready buyers on the basis of quotations. Relaying Rails are especially scarce and higher. The following are the approximate quotations per gross ton:

Old Iron Rails.....	\$24.00 to \$25.00
Old Steel Rails, mixed lengths.....	19.00 to 20.00
Old Steel Rails, long lengths.....	23.50 to 24.50
Heavy Relaying Rails.....	31.00 to 32.00
Old Car Wheels.....	20.50 to 21.50
Heavy Melting Steel Scrap.....	19.00 to 20.00
Mixed Steel.....	15.50 to 16.00

The following quotations are per net ton:

Iron Fish Plates.....	\$22.00 to \$23.00
Iron Car Axles.....	24.00 to 24.50
Steel Car Axles.....	21.50 to 22.00
No. 1 Railroad Wrought.....	21.00 to 22.00
No. 2 Railroad Wrought.....	18.00 to 19.00
Shafting.....	18.50 to 19.00
No. 1 Dealers' Forge.....	16.00 to 16.50
No. 1 Bushing and Wrought Pipe.....	13.50 to 14.00
Iron Axle Turnings.....	14.00 to 15.00
Soft Steel Axle Turnings.....	13.50 to 14.00
Machine Shop Turnings.....	13.00 to 13.50
Cast Borings.....	9.00 to 9.25
Mixed Borings, &c.....	9.50 to 10.00
No. 1 Boilers, cut.....	13.00 to 13.50
Heavy Cast Scrap.....	14.50 to 15.00
Stove Plate and Light Cast Scrap.....	11.00 to 11.50
Railroad Malleable.....	16.00 to 16.50
Agricultural Malleable.....	14.00 to 14.50

Metals.—An easier feeling has developed in Copper, but prices are without essential change, with a fair demand. Lake sells at 13½c. Pig Lead has continued in fair demand and firm. There is very little demand for Old Copper or Brass, but there is a good demand for Spelter and a firmer market. Selling prices on small lots of Old Metals are as follows: Heavy Cut Copper, 11¼c.; Red Brass, 11¼c.; Copper Bottoms, 10c.; Lead Pipe, 3.70c.; Zinc, 3½c.

Coke.—There has continued to be a good demand and a stronger market, in sympathy with Eastern points, where higher prices are prevailing. The lowest price made in this market during the week was 1000 tons at \$5.15, Chicago. Standard 72-Hour Connellsville Foundry Coke is quoted at \$5.25 to \$5.50, and Virginia and West Virginia, \$5.15 to \$5.50 per ton, Chicago.

Philadelphia.

FORREST BUILDING, June 10, 1902.

The situation shows no signs of clearing, so that it is quite impossible to speculate on what may be done this week, next week or next month. All that any one does know is that there is a scarcity of material amounting almost to a complete famine, and that the chances appear to be that it will be worse before it is better. Of course the cutting down in supplies may be, and probably will be, offset by a cutting down in demand, but that is certainly not a thing to be desired. Business conditions are magnificent, and if they were unrestricted by the capricious demands of labor 1902 would so far surpass all former records that even the most pronounced optimists would be surprised. Under present conditions and present influences the surprise may prove to be of an entirely different character, but, as already intimated, it is useless to speculate when there is as

much uncertainty as there is at the present time. As the market stands to-day, it may be said to be absolutely bare of Pig Iron, Steel Billets and Structural Material, all of which are being purchased and imported from other countries. Other articles, such as Plates, Bars and Sheets, are in fairly good supply from local sources, although subject to a slight delay in deliveries, but in most cases (when they cannot be made sooner) 30 to 60 days' deliveries seem to be fairly well assured. A considerable tonnage has been arranged for in Europe and in Canada, including Pig Iron, Billets, Structural Material, some Bars (both Iron and Steel), and it is reported from London that one or two large lots of Plates have been purchased for shipment to the United States. The strike in the coal regions, however, dominates the situation to such an extent that it is impossible to say how the market will be affected under such a combination of influences. Assuming that American mills and furnaces cannot secure fuel to keep them at work, the same difficulty will affect the consumers of mill and furnace products, so that one will about offset the other, and what will be the advantage in having foreign material if it cannot be used immediately? The entire situation is, therefore, so full of complications that whichever way one turns new difficulties are presented, so that whatever report of the Iron market may be made to-day may require revision 24 hours hence. At present the feeling in regard to the miners' strike is that it will not be long before it is arranged, as the interests of the entire country are jeopardized every day it continues, and every day makes things worse than they were the day previous.

Pig Iron.—The demand is not large, as there are very few who are inclined to pay to-day's prices unless their needs are imperative. The struggle is to get deliveries on contracts made when prices were dollars below what they are to-day; and while a great many of the shipments are to cover contracts of this kind, there is still a wide discrepancy between supply and demand. This is, in a measure, covered by purchases of foreign material, supplemented by whatever American Iron can be made available. The net result, however, is an increasing shortage, which under ordinary conditions would probably become worse instead of better; but if the fuel supply is going to run short, consumption will be checked to an extent which may neutralize the Pig Iron shortage. While it cannot be said that there has been any general suspension of work because of a fuel shortage, some large consumers are so near to it that it may occur at almost any moment. Meanwhile purchasers of Pig Iron have to pay extremely high figures to get prompt shipments. Prices vary considerably, but when it comes to actual business \$22 to \$22.50 for No. 2 X Foundry is about as well as can be done. Some sellers say that these figures are \$1 too high, but the trouble is that they have no Iron for sale, so that there is no alternative but to consider \$21 to \$21.50 as a nominal figure or for deliveries three or four months later on, the former quotations being for June and July shipments. Inquiries that are now coming in indicate a belief on the part of some large consumers that high prices are likely to continue into next year. Some sales have been made for deliveries during the first and second quarters of 1903 at prices said to be equivalent to \$20.50 to \$21 for No. 2 X, and at \$21 to \$21.50 for the last quarter of 1902. The feeling is very unsettled, however, and some are disposed to take their chances rather than commit themselves to the figures which would have to be paid under present conditions. Nevertheless, it is undoubtedly a fact that the sentiment in regard to a lower range of prices is gradually changing. With the prospect of phenomenal crops, the settlement of the South African war and the increasing supplies of the yellow metal both in this country and abroad there is really no substantial basis for expecting any setback to business. The labor question will no doubt be arranged pretty soon, and with that out of the way it is difficult to see what there can be to prevent a volume of business entirely unprecedented. As regards imported Iron, may be mentioned considerable quantities of Low Phosphorus at a price equivalent to \$22.50 to \$23, ex-ship, and Middlesbro at \$20 to \$20.50, according to date of delivery, but purchases are

mostly for spot lots, lots afloat or for early shipments. Prices for American Iron range about as follows for deliveries extending from October to April, earlier dates being anywhere from \$1 to \$1.50 more money:

No. 1 X Foundry.....	\$21.50 to \$22.50
No. 2 X Foundry.....	20.50 to 21.50
No. 2 Plain.....	20.00 to 20.75
Standard Gray Forge.....	19.00 to 19.50
Ordinary Gray Forge.....	18.50 to 18.75
Basic.....	19.00 to 19.50
Low Phosphorus.....	22.50 to 23.00
No. 3, Middlesbro } prompt shipments..	20.00 to 20.50
Scotch Irons.....	21.50 to 23.00

Billets.—There is no change in the Steel situation, American Steel being practically out of reach. German Steel is selling at \$30 to \$30.50, ex-ship, and English and Scotch at \$31 to \$32.50, according to specifications. The mills in this vicinity are now receiving regular and heavy shipments of foreign Steel.

Plates.—The demand for Plates is extremely satisfactory, coming as it does from all quarters and from all classes of consumers. Boiler makers are noticeably busy, however, and that is usually considered about the best index possible to the general situation, as it covers all departments of business that require steam. Bridge building is also particularly active, the exception to general activity (if any) being in the shipyards in which new business is not as large relatively as in other branches. Prices are firm at about the following figures, but there is business enough to allow every concern to make their own prices without regard to what others may do: Small lots, 2.10c. to 2.15c. Carload lots and upward: $\frac{1}{4}$ -inch and thicker, 2c. to 2.05c.; Universals, 2c. to 2.05c.; Flange, 2.10c. to 2.20c.; Fire Box, 2.25c. to 2.30c.; Marine, 2.30c. to 2.35c.; Charcoal Plates, C. H. No. 1, 2 $\frac{1}{2}$ c.; C. H. No. 1 Flange, 3c.; C. H. No. 1 Flange Fire Box, 3 $\frac{1}{2}$ c.

Structural Material.—The difficulty in securing prompt deliveries is measurably relieved by the enterprise of a few leading merchants who have arranged for regular shipments from abroad. Prompt deliveries of moderate sized lots can be made from stock at prices varying from 2.25c. to 2.50c. for Beams, Angles, Tees, &c., although as much as 3c. has been paid for some specifications. Mill prices are said to be considerably less than 2c., but as deliveries cannot be made unless subject to great delay such prices are of no value to those who need quick deliveries.

Bars.—The Bar trade is a little quiet and somewhat irregular as regards prices. The suspension of work at several of the leading mills in this district cuts off the supply, but this is partly offset by a decrease in the demand from the mining districts, so that at 2c. to 2.1c. there is not much trouble in placing orders, although in some cases higher figures are said to be required. Steel Bars are not to be had from first hands, so that prices are hardly quotable.

Sheets.—There is a good demand, with prices about as follows for best makes and a tenth less in carload lots for Common Sheets: Nos. 10 and 12, 2.40c. to 2.60c.; No. 14, 2.70c.; Nos. 16 and 17, 3c.; Nos. 18-21, 3.30c.; Nos. 26, 27, 3.40c.; No. 28, 3.50c.

Old Material.—The anomalous conditions reported a week ago are still in force, so that prices are very uncertain, but in most cases are about as follows for bids and offers for deliveries in buyers' yards: Low Phosphorus Scrap, \$25 to \$26; Heavy Melting Steel, \$21 to \$21.50; Steel Rails, short lengths, \$21 to \$21.50; Choice Railroad Scrap, \$23 to \$24; No. 1 Yard Scrap, \$19 to \$20; No. 2 Light Forge, \$17 to \$18; No. 2 Light, old, \$15 to \$16; Machinery Cast, \$18 to \$18.50; Iron Rails, \$24.50 to \$25.50; Old Car Wheels, \$19.50 to \$20.50; Iron Axles, \$29 to \$30; Steel Axles, \$27 to \$28; Wrought Turnings, \$16 to \$17; Cast Borings, \$10.25 to \$10.75.

Harrison I. Potts of Horace T. Potts & Co. arrived on the "St. Paul" from Southampton from a business trip to Great Britain and the Continent.

W. W. Hearne of Matthew Addy & Co. sailed from Southampton last Saturday on the steamship "Philadelphia," which is due in New York on June 14.

Cleveland.

CLEVELAND, OHIO, June 10, 1902.

Iron Ore.—The week that has just closed has been one of the most satisfactory which the shippers have experienced since the opening of the season of navigation. The great trouble has been an annoying shortage of cars, but the railroads, having their cars freed from carrying Anthracite Coal to the lakes and not having the heavy demand for them in the Valleys which is usual, are now able to turn over to the Ore shippers a supply entirely adequate to the present needs, with the result that there was a great boom in the movement of Ore from the lake unloading ports to the furnace stock piles. Whether this relief will disappear with the end of present labor trouble or whether the coming June increase in the supply of equipment will make the temporary relief permanent is a question to be answered hereafter. With material moving faster there is a greater call for boats at upper lake docks, but no change in the rates.

Pig Iron.—The Valley district has been partially freed from the strike which broke out last week, and now there are threatenings of another outburst. Three furnaces are idle this week, due to a difference of opinion between the workmen and the owners. The latter refuse to take back some of the leading spirits among the strikers, and the organization insists upon all men being employed. The week's delay, while expensive, had no great effect upon the market. The Basic and Bessemer furnaces, which were mostly idle, report that the conditions of their sales will make it impossible for them to get enough material ahead to make up the losses of the week. It will keep most of them busy throughout the year meeting the new demands made upon them by those who hold contracts. For third and fourth quarter delivery there is still a little talk of some material, both Bessemer and Basic, going at \$21.75 in the Valleys. For fourth quarter and for first quarter of 1903 delivery there is a report that 100,000 tons of Bessemer have been sold at \$20.50 in the Valleys, the United States Steel Corporation being the reputed buyers. There is still some Foundry Iron on the market for third and fourth quarter delivery, and the demand is very active. The price holds, as it has been, at \$21 in the Valleys for No. 2. The Southern furnaces are making quotations on good sized blocks of material to be delivered during the third and fourth quarter of this year. Prices vary greatly. Some are holding at \$17 at the Birmingham furnace, while the majority are quoting \$18 at the furnace, to which is added the \$3.70 rate to make up the Cleveland quotation. The prospect of a spread of the Hard Coal strike into the Soft Coal district through sympathy has begun to annoy some of the furnacemen in this locality.

Finished Material.—At a meeting of the Plate Association last week it was decided to suspend that organization for the time being. Ostensibly the reason for this action was that there is no more material to be sold by the big mills, and therefore any seeming regulation of prices is idle. Inside information seems to indicate a serious difference of opinion. The larger mills are contending for a conservative attitude among producers and for stability in prices on the lower plane. Some of the smaller mills, and especially those in the East, have material which may be shipped quickly, and seeing a ready market at a higher price are inclined to throw prudence to the wind and take the larger profits. It was to permit these mills to make such advances, if they saw fit, without running counter to any announced policy of the association, that the reins of government were allowed to relax in the suspension of the pool for the time being. No mill that is selling above the association price is getting less than 1.90c. at the mills, and in some instances quotations are being made as high as 2c. The association price to date has been 1.70c., Cleveland. The Bar situation has not changed much other than that the shortage of the larger sizes is growing more pronounced and the mills are taking larger premiums than before. Some of the jobbers here are refusing to make advances commensurate with those asked by the

mills which have unsold capacity, and the market in a few instances presents the anomaly of the jobbers underselling the mills or at least the two making the same quotations. The smaller sizes of Bessemer Steel Bars are being sold at 1.60c., Pittsburgh, but the larger ones are selling at between 1.80c. and 1.90c., Pittsburgh. Bar Iron is not much more plentiful than it was, but the demand has been a little stronger since Bessemer Steel Bar prices went soaring. The shutting off of production by some of the mills and the overselling of others have about deprived the market of any great amount of material. The price generally does not change from 1.80c., although it is confessed that the quotation is purely nominal for the time being. The selling of Steel Rails for delivery next year has become a feature of the market, and a large tonnage will be covered before the month is out. The immediate demand for Light Rails has not changed in the least and prices are well up. The buying of Structural Steel for next year's delivery has continued briskly, and it is now reported that most of the available material for the first quarter of next year has been entirely sold up. Little material is offered for immediate shipment, and the mills are showing the same disposition to take large premiums, some of them asking the jobbers' prices of from 2¼c. to 3c. The Sheet market is very active now. This trade presents the only branch which is not entirely sold up for the remainder of the year. The demand, however, is very good, and prices remain firm as recently quoted—namely, 2.50c. for No. 10 as a basis on the gauges between Nos. 10 and 16 and 3.50c. to 3.60c. for No. 27 as a basis for the gauges between Nos. 17 and 28 for one pass cold rolled, full cold rolled being 10c. extra.

Old Material.—The market has been brisk this week, with a good general demand for material. Jobbers report that they are able to sell about all that they can get of all grades at the reigning prices. The following quotations are continued: No. 1 Wrought, \$19.50 net; Iron Rails, \$27.50 gross; Iron Axles, \$26 net; Cast Borings, \$10 gross; Wrought Turnings, \$15.25 gross; Cast Scrap, \$16 gross; Car Wheels, \$19 gross; Heavy Melting Steel, \$19 gross; Old Steel Rails, \$20 gross.

Cincinnati.

FIFTH AND MAIN STS., June 11, 1902.—(By Telegraph.)

There is not enough news in the Pig Iron market just now to make even one short paragraph. The situation is practically unchanged and offers no suggestions from which to argue a change for the near future. There is but little standard Pig Iron, either Northern or Southern, selling, chiefly for the reason that there is but little in sight to sell. Some few round lots reported sold appear to be special grades not down in the regular trading quotations. A few sales of Foundry Irons up to a maximum of 200 tons are reported on the basis of \$17 to \$17.50, Birmingham. The market is certainly very strong and quotably at least 50c. higher than last week's figures. The strike in the Virginia Coke regions is beginning to have some influence on the situation, at least theoretically, and if it continues will have a distressing effect throughout this field. Freight rate from Hanging Rock district is \$1.10 and from Birmingham \$2.75. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$20.25 to \$21.00
Southern Coke, No. 2.....	19.75 to 20.25
Southern Coke, No. 3.....	19.25 to 19.75
Southern Coke, No. 4.....	18.75 to 19.25
Southern Coke, No. 1 Soft.....	20.25 to 21.00
Southern Coke, No. 2 Soft.....	19.75 to 20.25
Southern Coke, Gray Forge.....	18.75 to 19.25
Southern Coke, Mottled.....	18.75 to 19.25
Ohio Silvery, No. 1.....	22.85 to 23.35
Ohio Silvery, No. 2.....	22.35 to 22.85
Lake Superior Coke, No. 1.....	23.85 to 24.35
Lake Superior Coke, No. 2.....	23.35 to 23.85
Lake Superior Coke, No. 3.....	22.85 to 23.35

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades.....	\$25.00 to \$25.75
Standard Southern Car Wheel, No. 2.....	24.50 to 25.00
Lake Superior Car Wheel and Malleable.....	24.00 to 25.00

Plates and Bars.—The market is strong, and the quotations show no change. We quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.90c. to 2c., with half extras; same, in small lots, 2.20c., with full extras; Steel Bars in carload lots, 1.72c., with half extras; same, in

small lots, 2.20c., with full extras; Angles, 2.30c. to 2.50c.; Plates, 3-16 inch and heavier, 2c.

Old Material.—The market is practically unchanged and rather active. We quote dealers' buying prices, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, \$20 per net ton; Iron Axles, \$23 to \$25 per net ton; Cast Machine Scrap, \$14.50 to \$15 per gross ton; Steel Rails, rolling mill lengths, \$24 to \$24.25; same, short lengths, \$17 to \$17.50 per gross ton; Car Wheels, \$19 to \$19.50 per gross ton; Cast Machine Scrap, \$14.

Birmingham.

BIRMINGHAM, ALA., June 9, 1902.

We have had the past week torrid weather and a hot market. The melting value of Iron was advanced and sales at increased prices prevailed all along the line. The reports from those interests taking orders are to the effect that the demand was better, and prices the last half of the week were advanced without detriment to it. No. 2 Foundry sold during the week at \$17 and \$17.50, and at the close those who had any to sell were holding at \$18. No. 1 Soft sold at both \$18.25 and \$19, and the latter was asking price at the close. No. 3 Foundry, after selling at \$17, was advanced to \$17.50, with transactions. No. 4 Foundry is held at \$17, and Gray Forge can be quoted now at \$16.50, though the inference is strong that a sale of 150 tons was made at \$16. Sales of Silver Gray were quoted in last letter at \$20, but one seller the past week would have booked an order at \$17.50. This illustrates the irregularity of market values. There were no orders of significance in volume. The buying has, as a rule, been limited to the satisfying of necessities for the quarter ahead. But there was a placing of some orders for the last quarter of 1902. The most of this business has been booked on a basis of \$16 for No. 2 Foundry; but that value was advanced during the week to \$17. No sales at that figure were reported. Inquiries for delivery the first quarter of 1903 have increased, and some sales have been made. But their extent is, so far, kept secret. Careful inquiry develops the admission on the part of five interests of sales for 1902 delivery, in volume equaling the anticipated output. There are a few interests not sold up, and probably 100,000 tons of the total of the district are yet to be placed of this year's output. One interest will furnish a large part of this amount. Of course, opinions vary as to when there will be a change in present conditions. One man's opinion on that is as good as any other man's opinion. But all recognize the fact that the change will quickly follow the accumulation, real or prospective, of stocks. The latter are practically nil. To illustrate, three weeks ago a leading interest closed the week's business with 90 tons on hand, all told. It increased to 160 tons; and this week it will be 90 tons again, or less. All are on an equality in this respect. Not a single interest can boast of stock on hand. There is nothing to add to what has already been said of the contemplated new furnaces. They are "abornin'" and further mention of safe delivery, just yet, is but anticipation of facts known only to the parents of the expected arrival. Coal and Coke continue in good demand, and are firm at \$4.25 to \$4.50 for Coke, Birmingham basis. For Coal the price ranges from \$1.20 to \$1.25 for run of mine, and up to \$1.35 to \$1.40 for Nut and about \$1.60 for Lump Coal. These prices may be modified in accordance with the reputation of the various seams. The desire for investment in Coal property continues, and an important deal is now on the tapis for a body of Coal lands in the Warrior field. It will probably be concluded this week. The interest felt in inducing the location of new industries is shown by the action of M. H. Smith, president of the L. & N. Railroad, who has authorized M. & F. Sloss to donate to desirable bona fide industries that will locate on his line any reasonable amount of Coal or other lands desired. One cotton mill has accepted the offer, and will locate as soon as site is selected. Two more are considering the proposition, with a strong leaning to acceptance of the offer.

This action has stimulated public effort, and the Commercial Club is organizing for united and aggressive action along this line, with several prospective successes as yet in embryo. The report of its secretary shows for the past year that expenditure for extensions, enlargements and improvements of established industries amounted to \$4,038,000; for 82 miles of railroads (new), \$1,476,000; for 1865 new building, \$3,251,850; for increased capitalization of old companies, \$1,750,000. The 124 new corporations required an organized capital of \$8,955,100. The grand total for the year was \$20,044,818. For the year ending May 1, 1902 deeds were filed, whose aggregate consideration amounted to \$7,111,966. This showing proves the old saying, "money talks."

The Coaldale Brick & Paving Company report a contract for 2,500,000 vitrified brick for paving purposes at Jackson, Miss.

The promotion of railroads is now successfully concluded when they show any merit. The Mobile & Western Railroad, from Mobile to Sheffield, has its corps of surveyors in the field locating the road. That task is near completion. Funds to build it are secured and with the completion of the survey are available. It will help us to the sea. Then there is the North Alabama & Tennessee Railroad, from Gadsden, for whose building the money is ready. South of us a road from Georgia has this city for its objective point. Then from the Mississippi River we are courted by another projected road, to whom we have said: "Barkis is willin'." The roads that are secured, and in prospect, are sufficient to make us an important and great railroad center. The Seaboard Air Line has its right of entrance to the city, as granted by constituted authority, disputed by the Belt Road, and the matter is in the courts now for adjudication.

Pittsburgh.

(By Telegraph.)

PARK BUILDING, June 11, 1902.

Pig Iron.—The blast furnace strike in the two Valleys is practically settled and most of the idle furnaces, including those of the Republic Iron & Steel Company, have again started. The men at most of the furnaces received a straight advance of 10 per cent. in wages, but the National Steel Company, operating three furnaces at Youngstown, four at New Castle, one at Niles and one at Sharon; the Sharon Iron Company, operating a furnace at Sharon, and the Shenango Furnace Company, operating three furnaces at Sharpsville, are still running under the old rate of wages. There is not much Pig Iron for sale for delivery this year and very little is being done. Bessemer Iron for shipment prior to October is firm at \$21 at furnace, but for the last quarter of this year and the first quarter of next about \$20.25, at furnace, or \$21, Pittsburgh, could be done. It is officially denied that the United States Steel Corporation have been inquiring for any Bessemer Iron lately, the last Iron the corporation bought being about a month ago, the price being \$16.50 at furnace and deliveries first quarter of next year. Gray Forge Iron is all of \$20, Pittsburgh, with some of the Valley furnaces quoting \$19.75 at furnace, equal to \$20.50, Pittsburgh. No. 2 Foundry Iron is \$21.50, Pittsburgh, for Northern brands. Southern Foundry is being sold here at somewhat lower prices.

Steel.—While the price of Steel is not any lower, yet it is true that more tonnage is being offered, and it is not as hard to get Steel as it was some time ago. Some consumers believe that prices of Steel will be lower toward the latter part of the year, when a good deal of new Open Hearth capacity will come on the market. We quote domestic Billets at \$33 to \$34, Pittsburgh, prices depending largely on the tonnage and deliveries wanted. Foreign Billets and Sheet Bars are being offered on the basis of about \$32.50 to \$32.75, Pittsburgh.

(By Mail.)

The labor situation continues to give some concern in the Iron trade, particularly from the fact that it looks as though the strike of the Coal miners may extend into the Bituminous Coal fields in Virginia. It is hoped that the efforts of Carroll D. Wright, who is believed to be acting for President Roosevelt, may result in the settlement of the Anthracite Coal strike. The blast furnace strike in the Mahoning and Shenango valleys has not yet been adjusted at three or four of the furnaces. Two or three of the furnace operators in the Shenango Valley decline to take back in their employ some of the leaders in the recent strike, and the men threaten to call out all the men at the furnaces where a settlement has been reached. It is believed, however, that the matter will be arranged this week and without another strike. The men are to get a straight advance of 10 per cent. in wages. Not much Pig Iron has been sold in the past week, but the market is very firm on the basis of about \$21 at furnace for Bessemer for shipment this side of October. For last quarter of this year and first quarter of next, \$20.50 to \$20.75 at furnace is quoted. Some foreign Steel continues to be brought into this market on the basis of about \$32.50, Pittsburgh, for Billets and Sheet Bars. The market on Finished Iron and Steel is very firm, but demand is not so urgent as some time ago.

Rails.—It is said the constituent companies of the United States Steel Corporation have booked about 300,000 tons of Rails for 1903 delivery. The outside mills, Cambria, Pennsylvania and Maryland, have also taken some tonnage, and it is probable about 600,000 tons in all have been entered for next year. A good deal of tonnage from this year will be carried over into 1903. Very high prices continue to be paid for Light Section Rails, which are scarce.

Ferromanganese.—Foreign 80 per cent. Ferro is being offered at \$49, Pittsburgh. The local maker of Domestic is out of the market at present.

Muck Bar.—It is said that \$36.50 has been offered for refined Muck Bar and declined. We quote the market at \$37, Pittsburgh, for best grades.

Plates.—The Plate Association made no change in official prices at the meeting held last Thursday. While two or three of the leading mills continue to quote Plates on the basis of 1.60c., they do not promise deliveries inside of six to eight months. Mills that are not sold up are able to get 1.75c. to 1.85c. for Plates, for shipment within two or three months. Tonnage is very heavy, and the leading interest are said to be sold up clear through this year. Official prices, as reaffirmed at the meeting last week, are as follows: Tank Plate, ¼ inch thick and up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra per 100 lbs. Plate 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms, net cash in 30 days. It should be noted, however, that mills that can make reasonably prompt deliveries of Plates can get from \$3 to \$5 a ton advance over the official prices.

Structural Material.—A round lot of Beams was recently sold at 2.25c., at mill, for July and August shipment. Tonnage continues heavy, but actual orders placed for 1903 delivery have probably been overestimated. Two of the leading Beam mills have not as yet sold a pound of Material for next year. A good deal of building was put off from this year owing to high prices and inability to get delivery, and much of this work will no doubt come up next year. There has been no change in official prices, which are as follows: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh. We note, however, that Beams and Channels for delivery within

30 to 60 days sell readily at 2.25c. a pound and up to 3c., depending on the size of the order and how soon Material is wanted.

Bars.—While it is true that the leading Implement makers have covered for a year or more ahead, yet current tonnage is large and the mills are filled up for months ahead. Some consumers who declined to place their contracts prior to April 1, when the price was 1.50c. for Steel Bars, have since come into the market and bought at 1.60c. Prices on Iron Bars are very firm, and while the pool price on these is 1.80c., Pittsburgh, sales have been made at 1.85c. to 1.90c. We quote Steel Bars at 1.60c., half extras, for carloads and larger lots, while small lots bring 1.70c. to 1.75c. All specifications for less than 2000 lbs. of a size are subject to the following differential extras: Quantities less than 2000 lbs., but not less than 1000 lbs., 0.10c. per lb. extra. Quantities less than 1000 lbs., 0.30c. per lb. extra. The total weight of a size to determine the extra, regardless of length. We quote Iron Bars at 1.80c., Pittsburgh, extras as per National Bar Iron Card.

Spelter.—The market has advanced sharply and Prime Western Spelter is held at 4.60c. to 4.62½c., Pittsburgh.

Merchant Steel.—Demand continues active and two of the leading mills decline to take tonnage for delivery prior to October. Prices are firm and we quote: Open Hearth Spring Steel at 2.30c. to 2.50c.; Toe Calk, 2.25c. to 2.35c.; Tire Steel, best grades, 2.15c. to 2.25c.; Cold Rolled and Cold Drawn Shafting, 50 per cent. off in carloads and 45 per cent. off in less than carloads in basing territory; Tool Steel, 6½c. to 7c. for ordinary grades and 12c. and upward for best grades, all f.o.b. mill, terms net 30 days.

Sheets.—There is a moderately active demand, but a good many large buyers are covered and are out of the market. Some of the Sheet mills continue to have a good deal of trouble to get Steel and once in a while have to close down waiting for Bars. We quote Black Sheets, box annealed, one pass through cold roll, at 2.90c. to 3c. for No. 27, and 3c. to 3.10c. for No. 28. It is only for very desirable orders that the lower prices are obtainable. Sheets for prompt shipment bring as high as 3.15c. to 3.25c. for No. 28. Jobbers charge from \$2 to \$5 a ton advance for small lots from store. We quote Galvanized Sheets at 70, 10 and 5 off in carloads and 70 and 5 to 70 off for small lots. All these prices are f.o.b. at mill.

Skelp.—One of the leading Pipe mills is placing heavy orders for Skelp and demand is better than for some time. The Pipe mills who do not roll their own Skelp have been buying and prices are very firm. We quote Grooved Iron Skelp at 2.15c. to 2.25c. and Sheared at 2.35c. to 2.40c., prices depending on the gauge. Grooved Steel Skelp is about 2.25c. and Sheared \$2 to \$3 a ton advance, depending on the size of the order and the gauges.

Merchant Pipe.—The Pipe market is active and prices are firm. The mills seem to have an active demand for all the Pipe they can make and are not accumulating stocks. Discounts in carload lots are as follows:

	Merchant Pipe.	Black.	Galvd.
½ to ¾ inch, inclusive.....		60	48
¾ to 12 inch, inclusive.....		67	55

Boiler Tubes.—Current tonnage is fairly large, but several of the leading consumers covered their requirements some time ago and are out of the market. Prices are firm and discounts on carload lots are as follows:

	Boiler Tubes.	Up to 22 feet. Per cent.
Steel.		
1 to 1½ inch, inclusive.....		45
2¾ inch to 5 inch, inclusive.....		62½
1¾ inch to 2½ inch and 6 inch to 13 inch, inclusive..		52½
Iron.		
1 to 1½ inch, inclusive.....		42½
2¾ inch to 5 inch, inclusive.....		50
1¾ inch to 2½ inch and 6 inch to 13 inch, inclusive..		40

Iron and Steel Scrap.—A moderate tonnage of Scrap is being sold, but consumers are buying cautiously, as prices are high and there is not much incentive to place orders ahead. Heavy Melting Stock for Bessemer and open hearth purposes is \$20.50 to \$21 in gross tons. No.

1 Railroad Wrought Scrap is \$22 in net tons. Re-rolling Steel Rails are \$22 in gross tons; No. 1 Cast Scrap is \$18 to \$18.50 gross tons; Wrought Turnings, \$14 net tons, and Cast Borings, \$14 gross tons. Iron Rails, rolling mill lengths, are very scarce and are held at \$27 to \$27.50 in gross tons.

Coke.—The car supply is very much better, and blast furnaces are able to get Coke as fast as needed. The Hecla Coke Company are building 300 new ovens in the Connellsville region, and the Bessemer Coke Company are building a lot of new ovens in what is known as the Lower Connellsville region. The *Courier* reports the output of Coke in the Connellsville region last week as 249,995 tons, the heaviest output in any one week for a long time. Connellsville Blast Furnace Coke is \$2.25 a ton on contracts, but has sold as high as \$2.50 to \$3 a ton for prompt shipment. Foundry Coke is \$2.75 a ton on contracts, but has sold as high as \$3 a ton for early delivery.

The Eleanor Iron & Steel Company, Irwin, Pa., manufacturers of Bar Iron and Skelp, have been succeeded by a corporation known as the Eleanor Iron & Steel Company. The offices of this company have been removed from the works at Irwin, Pa., to room 802 People's Savings Bank Building, Pittsburgh, Pa.

The American Steel Hoop Company and the National Steel Company, both of Pittsburgh, who have maintained sales offices for several years in London, England, have decided to discontinue those offices. The headquarters of both companies have been closed and will not be reopened again.

M. H. Treadwell & Co., 95-97 Liberty street, New York City, engineers, founders and machinists, and builders of standard and narrow gauge wooden cars, cinder cars and special machinery, have opened an office in room 1110 People's Savings Bank Building, Pittsburgh, with L. L. Knox in charge.

German Iron Market.

ESSEN, May 29, 1902.

The situation so far as the German Iron and Steel market is concerned is not quite as clear to-day as it was a month ago. The demand from abroad has sensibly declined as the result of the increased prices, and there has been little new work from the United States. It seems as though the export to your country always fluctuates. At times it is quite animated; then as soon as prices are lifted a little it practically ceases. Our domestic market, too, has become listless in many branches. The chief reason for this is that in spite of the efforts of the mills the dealers bought too much during the recent period of activity. Now they are coming upon the market with low offers in order to close out the purchases made. Generally speaking the works are employed in a satisfactory manner. Some of the large concerns cannot take any more orders for months to come.

The Ore business is quiet and the reduction in prices for spathic Ores has not led to any increase in the sales. The quantities mined are therefore still relatively small. The same is true so far as activity in the foreign Ore market is concerned. At last there is a little more animation in Pig Iron. The demand is increasing on all hands, and deliveries are being regularly made. Prices are about as follows: Spiegeleisen, 10 to 12 per cent. Manganese, 71 to 72 marks; Special Mill Iron, 60 marks, f.o.b. Siegen; Basic Bessemer Pig, 57.50 to 58 marks, f.o.b. consuming mill; Foundry Iron, No. 1 and Hematite, 65 to 66 marks; No. 3, 61 to 62 marks; Luxemburg Mill Iron, 46 marks; Luxemburg No. 3 Foundry Iron, 48 to 49 marks, f.o.b. furnace. It has not been possible to regulate the prices for Old Material through the efforts of the buying syndicate to the extent hoped for by consumers; therefore the syndicate has been dissolved. Heavy Cast Iron Scrap is now held at 52 to 53 marks; Open Hearth Scrap, 50 to 51 marks; Rail Ends, 54 to 55 marks; Heavy Wrought Iron Scrap, 57 to 58 marks; Old Iron Rails, 70 to 71 marks.

In Steel, sales for the third quarter are proceeding

regularly since the syndicate have decided to allow prices to remain unchanged. Export has fallen off because the Steel works are determined to market more in the form of Finished Goods in order to keep their rolling mills busier. A good deal of Steel also is required for the rail orders, which are still the backbone of the whole market. Without liberal orders for Rails the rolling mills would not be able to secure enough work, and there would be increased competition for orders for other rolling mill products, particularly Bars. Specifications for Beams are not coming in to the extent of sales made because building has been delayed by bad weather. There has been a good deal of inquiry for Bars; prices remain unchanged. Extraordinary concessions in extras are no longer made, however. No changes have taken place in the Plate market. There is not enough work in Boiler material and the distribution of orders is irregular. Other branches in the Plate trade are in better position, and there has been considerable work for Ship Plates actually placed and in sight. Home prices are unchanged at 160 marks for Steel Boiler Plates, while ordinary Plates cost from 130 to 135 marks, according to specifications. There is a good deal of work in the Sheet trade, although it is not altogether regularly distributed. The syndicate price remains unchanged. Prices for Wire Rods for the third quarter are to be fixed at a meeting of the syndicate, which is to take place at an early date. Sales therefore are light, but it is not expected that there will be a change in prices. Negotiations have been started to create a syndicate in Drawn Wire. This, it is expected, will lead to a hardening of the entire Wire market. At present prices for Steel Wire Rods are 130 to 132½ marks, according to size of order; while Ordinary Drawn Wire is 142½ to 147½ marks, and Nails are 160 to 165 marks. The Wire industry generally, notably Wire Netting, &c., shows good employment.

Besides sales recently made in Steel Rails, further export business is pending, so that the works are now asking fairly remunerative prices. Light Rails and Tramway Rails are being bought in notable quantities. Prices are: Mine Rails and Light Service Rails, 105 to 107.50 marks; Heavy Standard Rails, 120 to 125.50 marks; Girder Rails for Tramways, 135 to 140 marks, f.o.b. mill. Employment in Skelp varies according to whether the mills are supplied with export orders or not. Full work, however, is an exception, and prices are throughout unremunerative. Steel Boiler Skelp is quoted 121 to 122.50 marks, according to width; Gas Pipe Skelp, 122.50 to 125 marks; Iron Boiler Tube Skelp, first quality, 155 marks; second quality, 145 marks. So far as Gas Pipe is concerned the mills are fairly well employed, but the demand for Boiler Tubes is poor. There is more activity in Cast Iron Pipe. Machine shops and Boiler shops are very inadequately employed, and even the bridge shops observe a rapid decline in the amount of orders on hand. In the Hardware industry employment is relatively favorable and prices are fairly firm.

New York.

NEW YORK, June 11, 1902.

Pig Iron.—The market is quiet, but exceedingly firm, and a further upward tendency for prompt Iron. It appears that the great majority of founders have pretty thoroughly covered their requirements for the balance of the year. An interesting transaction closed during the last week was the order for 30,000 tons of Castings for the Pennsylvania tunnel under the North River, taken by the Bethlehem Steel Company, who will use the cupolas of the old Steel Rail mill for the foundry work. We note sales of about 15,000 tons of foreign Spiegeleisen at private terms. Importers quote \$27 to \$27.50 for Spiegel, ex-ship. Quotations for summer delivery are as follows: Northern Iron, at tidewater, No. 1 X, \$22.50 to \$23; No. 2 X, \$21.50 to \$22; No. 2 Plain, \$21 to \$21.50. Tennessee and Alabama brands are quoted as follows: No. 1 Foundry, \$21.75 to \$22; No. 2 Foundry, \$20 to \$20.50; No. 3 Foundry, \$19.25 to \$19.75.

Finished Iron and Steel.—The Plate makers decided during the week to maintain official prices unchanged, but for current business these have lost all interest. The market for Structural Material is quiet. An indication of how enormous has been the tonnage taken is shown by the fact that the American Bridge Company in May took contracts aggregating 70,000 tons. We quote at tidewater as follows: Beams, Channels and Zees, 2c. to 2.25c.; Angles, 1.95c. to 2.25c.; Tees, 1.95c. to 2.25c.; Bulb Angles and Deck Beams, 2.10c. to 2.25c.; Sheared Steel Plates are 1.95c. to 2c. for Tank, 2c. to 2.15c. for Flange, 2.15c. to 2.25c. for Fire Box. Refined Bars are 1.95c. to 2c.; Soft Steel Bars, 1.80c. to 1.85c.

The New York Machinery Market.

NEW YORK, June 11, 1902.

As has frequently been the case for very short periods during the last two or three years, there is a little complaint in the trade over present conditions. There has been a falling off of orders within the last week, and in some instances inquiries have also been fewer. This is especially noticeable in certain lines of machine tools. Shops are said to be getting abreast with their orders and fairly good deliveries are now obtainable. Certain lathe manufacturers are still far behind in their deliveries and they are trying to advance their prices. As noted last week, several Western lathe builders have already advanced about 5 per cent. During the week under review, one or two of the Eastern lathe builders are said to have advanced. It is hinted in the trade that some sort of a concerted movement is on foot among the lathe builders looking toward a uniform advance of prices. Nothing definite has been done, however, in this direction as yet. A Cincinnati planer builder is said to have advanced from 5 to 10 per cent., according to size of machine. It will, therefore, be seen that the tone of the market is still firm and that manufacturers are not worrying to any great extent over the little lull that has overtaken them. The number of unclosed propositions hanging fire is said to be very large at this time. Some of the big deals to which we have referred from time to time have been practically disposed of, though it was done in a way which avoided attention. A number of these buyers, who issued their specifications in large lists, did not make their purchases in large lots, but placed the orders in little dribbles at various times.

While the coal strikes are claiming the public attention in respect to the labor problem, the awkward situation arising in connection with the machinists is steadily becoming more pronounced every day. Aside from the trouble due to striking machinists, there is a general scarcity of this class of craftsmen. Machine tool builders in all sections of the country are encountering this condition. In the New England district affected by strike manufacturers are straining every effort to get help from other cities. They are also engaging agents in New York to keep close watch on immigrants and obtain whatever help they can from the incoming foreigners.

As for new machinery deals, there is still some attention paid to the railroad companies. It is expected that the Pittsburgh & Lake Erie Railroad will soon prove a heavy purchaser of equipment. The foundation for this report is the new shops which are to be erected at McKee's Rocks, Pa. Besides the main machine and erecting shop, which will be 170 x 500 feet, there is to be a large power house and blacksmith shop. Specifications for the equipment are reported to be now in course of preparation.

A Western railroad deal which it is thought will require a large amount of machinery is now receiving considerable attention. The Northern Pacific Railroad Company intend erecting extensive car repair and wood working shops at Missoula, Mont. It is stated in the trade that the company intend making this point a center not only for the repair work for that section, but eventually for car building.

Another railroad deal which is receiving some attention is the erection of car and repair shops at Ports-

mouth, Ohio, by the Norfolk & Western Railroad. The equipment has not been purchased.

The Boston & Maine Railroad Company, Boston, Mass., have let the contract for the erection of their power house, 43 x 147 feet, and brick car barn, 125 x 175 feet.

Several weeks ago we announced that the Pneumatic Signal Company of Rochester, N. Y., successors to the International Pneumatic Signal Company, contemplated the erection of a large plant at Rochester. The plans for this plant are now completed and have been approved by the directors of the company. The plant is to consist of a machine shop, 120 x 240 feet; foundry, 60 x 240 feet; pipe mill, 60 x 300 feet; blacksmith shop, 60 x 120 feet; power house, 50 x 80 feet, and carpenter and paint shops. No equipment has been purchased as yet. T. A. Smyth is secretary of the company.

The Nichols & Shepard Company, builders of threshing machinery, Battle Creek, Mich., have purchased a little machinery for a temporary equipment to replace one of their shops recently destroyed by fire. Later on the matter of a larger and more substantial structure will be considered. In connection with the orders just placed Manning, Maxwell & Moore obtained the machine tool end; the Niagara Machine & Tool Works, power shears, tinnern's tools, &c., and the B. F. Sturtevant Company received an order for blowers. F. O. Smith is purchasing agent for the company.

Lathes, drilling machines and finishing machines are required by the Atlas Coupling Company, Farmington, N. H., recently incorporated with a capital stock of \$100,000 for the manufacture of pipe couplings, the invention of H. O. Mooney. The company have acquired a shop, containing 22,000 square feet of floor space, which is equipped with a 75 horse-power boiler and a 50 horse-power engine. The officers are Dr. W. Wallace Nutting, president; E. H. Gowell, secretary, and John E. S. Hall, treasurer. H. T. Merriam is general manager.

The Sewerage and Water Board, 602 Carondelet street, New Orleans, La., will receive bids until August 12 for furnishing and erecting engines, centrifugal pumping machinery, boilers, dynamos and power transmission lines and appurtenances for the equipment of a central steam driven pumping and generating station and for transmission lines to seven substations, and for motors and pumps for the automatic operation of the substations, also for the equipment of one small independent steam driven pumping station. Fourteen centrifugal pumps, with an aggregate pumping capacity of about 4200 cubic feet per second, will be required. The range in capacity will be from 170 to 350 cubic feet per second, and the range in lift will be from 7 to 56 feet. Specifications, general plans and blank forms of proposal may be obtained at the office of the board. After June 20 specifications can also be seen at the office of Hering & Fuller, consulting engineers, 170 Broadway, New York City.

The Staten Island Brass & Grey Iron Foundry Company, Richmond Borough, New York City, recently incorporated, have a fully equipped foundry for the manufacture of castings of brass, gray iron, bronze, aluminum, &c. It is the intention of the company to considerably enlarge the present buildings. The officers are Harry Wilkes, president; William H. Davidson, vice-president, and Thomas L. Fell, secretary and treasurer.

The Municipal Heating Company, Syracuse, N. Y., have under consideration the expenditure of about \$150,000 in doubling the mileage of the mains and in building a new boiler house.

A new plant will be erected at Norwich, Conn., by the National Steam Economizer Company of Springfield, Mass. The company build an apparatus for utilizing exhaust steam serving as a feed water heater condenser and hot air blast. The plant will be built with a view of ultimately producing the engines and pumps used in the apparatus. Agencies will be established at New York, Boston, Chicago, Buffalo and Richmond.

James M. Seymour, Jr., consulting engineer, 43 Lawrence street, Newark, N. J., will have plans and specifications ready in about one month for the mechanical equipment of the new City Hall to be erected in New-

ark at a cost of \$3,000,000. The general specifications and plans are now ready, having been prepared by architects John H. and Wilson C. Ely, 800 Broad street, Newark, N. J.

The Buffalo Forge Company, through their New York office, closed a contract with the New York Edison Company involving 16 large fans, to be used in connection with forced draft apparatus at the new Waterside station.

The Central Railroad of New Jersey has arrived at the point of purchasing equipment for the new paint and car shops at their new Elizabethport, N. J., plant. The contract for heating and ventilating these buildings was awarded to the Buffalo Forge Company, who also secured the orders for heating the other portions of the plant.

The Washington Company of 39 Cortlandt street sold three 200 horse-power Franklin water tube boilers to the Sycamore Cotton Mills of Sycamore, Ala. They also closed a contract with the Hudson Valley Railway Company of Glens Falls, N. Y., for three 250 horse-power Franklin boilers. This is a duplicate order of one placed several months ago.

The American Construction & Supply Company of New York are purchasing equipment for a beet sugar plant to be erected at Alma, Mich. They placed an order with Hooven, Owens & Rentschler of 39 Cortlandt street for a 175 horse-power Corliss engine.

M. H. Treadwell & Co. of 95 Liberty street, New York, and Lebanon and Myerstown, Pa., have just opened an office in Pittsburgh, in charge of L. L. Knox.

The Washington Company of 39 Cortlandt street, New York, selling agents for the Franklin water tube boiler, have opened an office in Boston, in charge of P. D. Worcester, who for a number of years was connected with the Goubert Mfg. Company. They have also opened an office in Pittsburgh, in charge of James E. McNary.

The Boston Machinery Market.

Boston, June 7, 1902.

Aside from the dealers in second-hand machinery, the members of the trade report business as not unsatisfactory, but inclined to be quiet. Some believe that the usual summer lassitude has put in an appearance a trifle earlier than usual, and others think that the Worcester strike has created a slight feeling of uncertainty which somewhat affects the market, but there are no prospects of labor trouble in this vicinity at present. The dealers in second-hand machinery report a rushing business, several of them declaring that they cannot keep up with orders. The difficulty in obtaining iron and steel causes a delay in the filling of orders at foundries and this leads to a greater inquiry for second-hand goods by people who want prompt delivery.

R. R. Sherman & Co. state that they find it necessary to work nights, days and Sundays, in order to supply the demands made upon them. They say that they have supplied refitted power plants in establishments where the machinery is all new and that they have the names of many corporations on their books, including the New England Gas & Coke Company.

R. W. Pratt reports the sale of a refitted Corliss engine of 1000 horse-power to the Sterlingworth Railway Supply Company, Easton, Pa., and another to the Elmira Rolling Mill Company, Elmira, N. Y. An order is in hand for a Corliss engine and boiler to go to Mexico.

J. M. Marston & Co., 228 Ruggles street, issue a circular illustrating and describing Marston's patent hand, foot and steam power wood working machinery, a line which has been on the market for some years, but in which there have recently been some changes. The No. 1 hand and foot power circular saw has been provided with an improved iron top consisting of a center piece 8 inches wide running the whole length of the table, which is bolted solidly to planed cleats on the under side. This is designed to strengthen the parts subjected to the greatest wear and to keep them perfectly accurate and true at all times. Their latest power circular saw has a remodeled frame, and is referred to as being

in every way a heavier and more substantial machine. The Marston line of band saws is described, and a price-list of extra saws and tools is also furnished.

The Massachusetts Senate has rejected the bill allowing strikers to peacefully "picket" mills or other places of business in which strikes, or lockouts, or labor disputes are occurring. The bill had passed the House.

The Massachusetts House of Representatives last Friday ordered a bill to third reading providing for the building of a subway under Washington street, Boston, from near Broadway to Adams square, Haymarket square, or Causeway street. The subway is to contain four tracks—two for elevated trains and two for surface cars. As the provisions of the bill represent a compromise between the city of Boston and the Boston Elevated Railway Company, there is little doubt of its passage by both branches of the Legislature. The distance from Broadway to Adams square is approximately 4900 feet, and the distance from Broadway to Causeway street is approximately 7200 feet, Haymarket square being a trifle nearer Causeway street. The details of construction will not be considered until the bill becomes a law, and no estimates as to material required have as yet been made.

Metal Market.

NEW YORK, JUNE 11, 1902.

Pig Tin—Is now under close control and the market for spot during the last week was very strong and higher. There was scarcely any business, however, for consumptive account. At the close to-day the market was quoted 30.50c. to 31c. for spot, and 29.50c. to 30c. for futures. The principal advances were made here yesterday. London followed immediately, and thereby checked signs of weakness, which had been evident during the early portion of the week. The closing London prices to-day were: Spot £131 5s. and Futures £126 10s.

Copper—The market has been dull and devoid of interesting features, with an underlying weakness. Prices receded slightly during the week, and while there was a good business on 'Change it was speculative, consumers buying scarcely anything. The closing prices here to-day were as follows: Lake, spot to October, 12.25c. to 12.60c.; Electrolytic, spot to September, 12.25c. to 12.30c.; Casting, spot to September, 12.12½c. to 12.25c.; Standard, spot to October, 11.70c. to 11.90c. During the early portion of the week under review the London market advanced considerably. Within the last day or so this strength has faltered, and the closing cables to-day named £54 7s. 6d. for spot and £54 11s. 3d. for futures. Best Selected advanced £1 during the week to £59.

Pig Lead—No change is to be noted in this market. The Smelting & Refining Company quote Desilverized on a basis of 4.12½c., spot, and 4.10c., 15 days, New York. The London market advanced to £11 7s. 6d. yesterday, but reacted to-day to £11 5s.

Spelter—The market is rather quiet, with spot still scarce at nominally 4.87½c. It is reported that the Western producers are showing more disposition to offer prompt shipments. The St. Louis market has shown a little weakness, spot having been sold at 4.65c. The London market has advanced 7 shillings 6 pence since our last writing to £18 12s. 6d.

Antimony—Is unchanged. Hallett's is quoted 8c. to 8¼c.; Cookson's, 10¼c., and outside brands, 7½c.

Nickel—The situation is unchanged. Ton lots are quoted at 50c.

Quicksilver—Prices are on a basis of \$48 per flask of 76½ lbs. in lots of 56 flasks or more.

Tin Plates—The market is unchanged. The American Tin Plate Company are quoting for delivery until October 1 on a basis of \$4.19 per box of standard 100-lb. Cokes, f.o.b. New York, or \$4, f.o.b. Pittsburgh district.

The American Association for the Advancement of Science will meet in Pittsburgh, June 27 to July 3. The attendance is expected to be very large, and the meeting is regarded as a very important one. Preliminary arrangements are being made for the entertainment of the delegates, and trips will be made to some of the large

industrial plants in Pittsburgh, notably those of the Carnegie Steel Company. Emil Swensson, consulting engineer, Carnegie Building, Pittsburgh, is chairman of the Committee on Entertainment.

Shipbuilding Consolidation.

Another attempt is being made to consolidate shipbuilding interests in this country. Negotiations are progressing under the direction of Alexander & Green of 120 Broadway, New York, who stated this morning that nothing official had been given out, and that plans have not been carried far enough to justify a statement at this time. It is reported that the following concerns are to be included in the new company: Union Iron Works, San Francisco; Bath Iron Works, Bath, Maine; Hyde Windlass Company, Bath, Maine; Crescent Shipyard; Samuel L. Moore & Sons Company, Elizabethport, N. J.; Eastern Shipbuilding Company, New London, Conn.; Harlan & Hollingsworth Company, Wilmington, Del.; Canda Mfg. Company, Carteret, N. J. It has been reported that the company will be capitalized at \$20,000,000, half of which will be common and half preferred stock. Another report has it that \$25,000,000 of bonds are to be issued. The new company, it is believed, will be called the United States Shipbuilding Company, which is the name selected more than a year ago, when the first attempt was made.

Jones & Laughlin Steel Company—PITTSBURGH, PA., June 11, 1902.—It is not expected that the Jones & Laughlin Steel Company of Pittsburgh, who have recently been granted a charter, will take over the interest of Jones & Laughlins, Limited, and subsidiary concerns before August 1. A good deal of legal work has to be done before the transfers of the properties owned by Jones & Laughlins, Limited, can be made to the new corporation.

Tool Holders—From the Armstrong Brothers' Tool Company, 617 Austin avenue, Chicago, we have received a catalogue of their latest well-known tool holders. These holders are drop forged of steel and case hardened. The top and bottom are planed square with the sides. The hole for receiving the cutters is drilled and squared from the solid, insuring true and straight seats. The set screw is tool steel with tempered point. The cutters are made of a special self hardening steel with which speeds and feeds can be increased, and grinding will be required less frequently. Self hardening steel can be made extra hard by heating to redness and cooling off in a cold blast.

Control of the Stanley Electric Mfg. Company has been acquired by a group of capitalists identified with New York, New Jersey and Pennsylvania traction systems, among whom are William C. Whitney, P. A. B. Widener, Thomas Dolan, William L. Elkins and Thomas F. Ryan, and it is understood that the plant of the company at Pittsfield, Mass., is to be greatly increased in size at once.

Owing to labor troubles three of the plants in the Pittsburgh district owned by the Crucible Steel Company of America are partially closed down. It is thought that the trouble ought to be adjusted in a few days, as it is not serious.

Reuben Miller, Sr., recently elected president of the Crucible Steel Company of America, has gone to his summer home in the Muskoka region in Canada, to spend the summer months. He will visit Pittsburgh frequently on business pertaining to his new position.

Furnace A of the Carnegie Steel Company, at Bessemer, is being blown out, and will be relined and repaired. The other eight stacks at Bessemer are all running on Bessemer iron.

The report that the Carnegie Steel Company would build a large new billet mill at the Edgar Thomson Steel Works is officially denied.

Iron and Industrial Stocks.

There has been a fair volume of business in iron and steel stocks during the week under review, and, generally speaking, values have been well maintained in the face of the general stagnation in the stock market. Republic Iron & Steel issues have shown strength.

It is reported that the officials of the American Car & Foundry Company of St. Louis and the Pressed Steel Car Company of Pittsburgh are planning a merger of the two corporations. At the New York offices of the latter company no information could be obtained beyond a refusal to either confirm or deny the rumor. Should the consolidation be effected it will bring into one organization business interests with a combined capital of \$85,000,000, the American having \$60,000,000 and the Pressed Steel Car Company \$25,000,000. It will also merge 23 plants representing every portion of the railway car industry.

Sloss-Sheffield.—The report of the Sloss-Sheffield Steel & Iron Company for the quarter ended May 31 shows an increase in net earnings of \$60,423, and in the total surplus of \$230,208, as follows:

	1902.	1901.	Increase.
Profits from operations.....	\$307,617	\$241,032	\$66,585
Depreciation and renewals.....	35,643	29,481	6,162
Net earnings.....	\$271,974	\$211,551	\$60,423
Interest and taxes.....	60,000	57,469	2,531
Balance	\$211,974	\$154,082	\$57,892
Legal and bond expense.....		10,322	*10,322
Balance	\$211,974	\$143,760	\$68,214
Dividends	114,000	114,000	
Surplus	\$97,974	\$29,760	\$68,214
Acct. surplus carried over.....	614,391	452,397	161,994
Total surplus.....	\$712,365	\$482,157	\$230,208

* Decrease.

All outstanding bonds and scrip of the Cambria Iron Company will be redeemed at par on July 1. After that date interest will cease. This refers to the balance of Cambria iron bonds which were not retired before maturity out of the Cambria Steel Company earnings, the amount remaining being less than \$200,000 of the original \$2,000,000 issue.

The International Steam Pump Company report net profits, after all deductions for depreciation and other charges, for the year ended March 31, of \$1,510,468 applicable to dividends.

Stockholders of the Barney & Smith Company of Dayton, Ohio, have voted to cancel \$1,500,000 of the common stock. The annual report shows net surplus earned \$260,000 after deduction for interest, dividends and improvements.

The preferred and common stocks of the Railway Spring Company of America have been listed on the Pittsburgh Stock Exchange.

Dividends.—The Westinghouse Electric & Mfg. Company of Pittsburgh have declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable July 1, to stock of record June 14.

The Otis Elevator Company have declared the regular quarterly dividend of 1½ per cent. on their preferred stock, payable July 15. Books close June 25 and reopen July 16.

The Sloss-Sheffield Steel & Iron Company have declared the regular quarterly dividend of 1½ per cent. on their preferred stock, payable July 1. Books close June 20 and reopen July 2.

The Talbot Furnace Started.—Jones & Laughlins, Limited, at Pittsburgh, made the first heat in their Talbot furnace on Monday night, June 9. The quality of the steel turned out was excellent, and after some minor changes have been made this furnace is expected to turn out about 400 tons of steel every 24 hours. It is possible that this company may build a second Talbot furnace after the success of the present one has been fully demonstrated.

The stockholders of both the Railway Steel Spring Company of Pittsburgh and the Steel Tired Wheel Company, at a joint meeting, have ratified the merger plan without opposition. The action of the stockholders

carried with it an increase in the capital of the Railway Steel Spring Company from \$20,000,000 to \$27,000,000. James C. Beach was elected treasurer. It was decided to increase the Board of Directors from 11 to 15, and the following were elected directors: W. H. Silverthorn, James C. Beach, J. W. Fuller, C. W. Barnum and Charles Miller. C. H. Halcomb retired as a director.

The Worcester Machinists' Strike.

WORCESTER, June 9, 1902.—The strike of the machinists drags along without special development. The employers are surely winning. The members of the machinists' union are not agreed as to future policy. Some of them have already gone back to work, others are talking of going back, and in not a few instances strikers have been to their employers, being received as individuals and not as members of the union, and have asked as to how they had best go back to work to make the least trouble for themselves from the union. The forces at work in the shops where partial strikes are on are increasing steadily, although the employers thus far have made no particular effort to get new men, preferring to give their old men a chance to get back. It is significant that no new shops are affected, the union not caring to spread the strike, which has entered more shops than the strikers had planned to touch. An open break of the strike is looked for any day now. As a matter of fact the strike has been a very minor affair, because of the thousands of machinists of Worcester not more than 350 at the outside have struck.

WORCESTER, MASS., June 10, 1902.—The strike at the shops of the Prentice Bros. Company began to break in earnest to-day, when three of the gang bosses, who went out with the strikers, went back to work, and others agreed to go to work to-morrow morning. This company were most seriously affected by the strike, all but 58 of their men going out just three weeks ago to-day. Little attempt was made at first to fill the strikers' places, but now new men are being taken on in considerable numbers and others from outside the city have contracted to go to work in the shops this week. To-day 15 new men were taken on, all high class machinists, and 20 more will be at work to-morrow morning, the officers of the company believe. So will be a considerable number of the strikers, unless promises made to-day go for nothing. It has been apparent for a week or more that the strikers have lost heart and are only too willing to go back to their jobs. Probably two-thirds of the machinists who went on strike have personally talked the matter over with their employers, and all express disgust at the strike and desire to go back. Only the fear of ridicule from the leaders has kept them out as long as this.

In no other shop is the situation serious. F. E. Reed Company have been constantly adding new men from outside the city. The few men who went out at other shops hardly numbered more than would naturally be laid off in July and August, when the dull times in the machine tool business arrive. The most strenuous of the strikers, who have been acting as pickets, have become more aggressive the past few days, and to-day the police were asked, for the first time, to keep loungers away from the street in front of the Prentice shop. The manufacturers are feeling exceedingly well pleased, because the strike is practically won by them, and in consequence fear of further trouble for several years has been removed.

J. N.

President Lynch of the International Metal Polishers' and Brass Workers' Union is authority for the statement that a co-operative company will be formed by the metal polishers and brass molders who are on strike in Cleveland, with a view to competing with plumbing supply shops where men are on strike. The International Union is expected to take between \$5000 and \$10,000 worth of stock, and the remaining stock will be sold to workmen at \$10 per share. It is stated the matter is now before the Executive Board of the International Union.

HARDWARE.

THE present month is notable for the number of important conventions which are held in it. While February is evidently the banner month for the meetings of Retail Hardware organizations, June can claim special distinction on account of the number and importance of its associations. Prominent among these is the Southern Hardware Jobbers' Association, which occupies an honorable position as a pioneer in trade organization and holds its twelfth annual meeting at Atlantic City next week. During the month also are held the meetings of the following important bodies, more or less closely related to trade interests of the Iron, Hardware and allied lines: National Association of Master Steam and Hot Water Fitters, American Association of Heating and Ventilating Engineers, National Association of Master Plumbers, American Foundrymen's Association, the Association of Manufacturers and Jobbers of Plumbers' Supplies, and the Central Supply Association. In addition to these the meeting next week of the American Hardware Manufacturers' Association, which is held at Atlantic City at the same time as that of the Southern Jobbers, will be recognized as one of especial significance, inasmuch as it will be the first meeting since its organization at Cleveland last October. Each of these conventions will doubtless call out a good representation of the interests to which they relate and should have a good effect. Apart from what may actually be done in the regulation of trade matters—a department of activity in which it is often attempted to do more than it is wise or feasible to carry into effect—many benefits should result from the conferences, which should cultivate breadth of view, renewed enterprise and a more fraternal disposition.

Those who are in charge of the interests of the Southern Hardware Jobbers' Association have taken measures to render next week's convention a large and enjoyable occasion. Not only have very cordial invitations been extended to manufacturers and the trade generally to participate in the meeting, but the programme has been so arranged as to leave ample room for pleasure and recreation, a feature the importance of which in business life is thus fittingly recognized. The fact that the meeting is held at a time when the vacation season is about commencing and all are feeling its influence will doubtless tend to emphasize this feature, which will be further fostered by the spirit of hospitality and warmth of social relationship which are so pleasantly characteristic of the Southern trade. At the same time ample provision is made for the discussion of grave, practical questions closely related to the welfare of the trade, and the consideration of the topics which will engage the attention of those in attendance should contribute substantially to the recognition of correct business principles. It is to be hoped that there will not be merely the enunciation of sound theories, but that something may be accomplished to render the transaction of business more agreeable and more profitable, as annoyances are mitigated, disturbing influences eliminated, and a basis laid for continued, and, if may be, enlarged prosperity.

The meeting next week of the American Hardware Manufacturers' Association will undoubtedly not only be largely attended, but possess much interest from the bearing it will have on important matters connected

with the trade. Up to the organization of this association there was no opportunity for manufacturers to come together to discuss questions relating to their common interests, and it is doubtless owing to this fact that a number of abuses have grown up which are not only to their detriment, but also militate against the welfare of the trade at large. Some of these have been considered by the association, acting through its Executive Committee, and measures taken to induce more business-like principles in matters in which, from one cause or another, they have been ignored. One of the subjects which will be prominently discussed relates to the loose manner in which orders placed with manufacturers have been interpreted by the parties placing them, by which such orders have been regarded as practically obligatory only on the manufacturer and at the option of the purchaser. A good deal has been done by recognition of proper trade principles during the past year or two to correct this inequitable and mischievous practice, but remnants of it are still found. There is, therefore, a fitness in having it considered at the approaching convention of the association. Questions relating to special brands will also be discussed, and there is little doubt that the general consensus of opinion among manufacturers will lead to a sentiment, if not specific action, which should discourage the practice. In addition to these subjects, for the consideration of which the programme provides, there are doubtless others which will come before the convention, the discussion of which will be for the advantage of the whole trade.

Condition of Trade.

There is a perceptible diminution in the volume of orders which are being received by manufacturers, thus furnishing the usual prelude to the dullness which is expected to prevail during at least part of the summer. The number of lines in which heavy stock orders are being placed by the larger buyers is comparatively few, as the requirements for the fall have been already covered for many kinds of goods, while in others there is a feeling that nothing is to be lost by waiting a little. This, however, does not indicate any serious apprehension that the market will weaken. There are certain influences which tend to impart continued strength to it. Among these the difficulty in getting raw material and the high prices which prevail are the most important. Many foundries are inconvenienced by the scarcity of iron, and manufacturers have corresponding difficulty in producing goods into which castings enter. The coal strike has something of a disturbing influence and causes some disquietude. It is hoped, however, that the matter may be adjusted before its consequences become too serious. The movement of general business, so far as the supply of the needs of the smaller merchants is concerned, continues very satisfactory. Jobbers generally, while reporting some relaxing in the demand, regard the trade as in excellent condition, the local merchants doing a good business. Prices are in the main without material change. In some lines which have been in insufficient supply manufacturers are catching up with their orders and given an opportunity to accumulate something of a stock. It remains to be seen whether the cessation of the urgent demand for goods will have much influence in inducing the making of concessions in price. While the situation is regarded as justifying the hope of a large volume of business for some time to come, it is generally recognized that when there is a material falling off in the demand the market will be subjected to a trying test, and a substantial reduction in prices is to be looked for. Fortunately

for the present, at least, the indications point to a continuance of prosperity, with a demand which will tax the facilities of manufacturers and should give a profitable business to merchants. If the promise of large crops is realized this will contribute greatly to this desirable result.

Chicago.

(By Telegraph.)

Most of the local jobbers in Hardware lines have experienced a less active demand during the past week, but the relief from the high pressure cannot but be welcome to most dealers. Some of the large jobbers still have an accumulation of orders which will require a full force and some working at night to fill. The urgent demand for the summer line of goods, such as Refrigerators, Freezers, Lawn Furniture, Screen Doors and Windows, Wire Cloth, Netting and Lawn Mowers, has more perceptibly diminished than for other specialties and manufacturers are catching up with some of their accumulated business. On the other hand, manufacturers' agents in such lines as Builders' Hardware, Locks, Butts, &c., find little change in the situation, new orders still pressing the unfilled business already booked. The demand for Tools, too, has abated but little. In Heavy Hardware new business has been less pressing, but for certain sizes of Channels, especially 5-inch, the demand has been urgent, with a dearth of such material. There has been less call for Steel Tires, Shafting, Steel Hoops and Bar Iron, but an active demand for Bolts, Bars and Nuts. One or two exceptionally large orders for Wire Nails have been taken, but the Wire business is falling off, as is usual at this time of the year, although compared with a year ago the volume of business is still considerable. Wire is selling less readily and mills are making prompt shipment on both Wire and Nails.

NOTES ON PRICES.

Wire Nails.—Mills are now in a position to make more prompt shipments of Wire Nails than for some time. Many have caught up with their orders, and with the decrease in demand are better able to meet the requirements of the trade. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.05
To jobbers in less than carload lots.....	2.10
To retailers in carload lots.....	2.10
To retailers in less than carload lots.....	2.20

New York.—While there is some falling off in the demand for Wire Nails in the local market the requirements are fair. The market is represented by the following quotations: Small lots from store, \$2.30; carloads on dock, \$2.18 to \$2.20.

Chicago, by Telegraph.—Generally speaking, there has been less activity in Wire Nails during the week, but one or two liberal contracts have been placed. Mills are now making prompt shipment, but while there is a slackening in business a firm tone prevails, and there seems no possibility of lower prices at the present time. The jobbing demand has been moderate, but the market has remained steady, single carload lots selling at \$2.20, and small lots at \$2.25 to \$2.30 from store.

Pittsburgh.—Demand for Wire Nails has fallen off very much in the past month or so, and there is no longer any difficulty in getting prompt deliveries. In fact, some of the Wire Nail mills are not as comfortably fixed with orders as they would desire. Most of the business now being done is on old contracts placed some time ago, and on which buyers are specifying fairly well. We quote Wire Nails at \$2.05 in carloads and \$2.10 in less than carloads, f.o.b. maker's mill.

Cut Nails.—Cut Iron Nails are still more difficult to obtain than those made from steel. The demand continues fair at unchanged prices. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots	\$2.05
Less than carload lots.....	2.10

New York.—The local requirements for Cut Nails are about in the usual proportion. Quotations for carloads and less than carloads are as follows:

Carloads on dock.....	\$2.18
Less than carloads on dock.....	2.23
Small lots from store.....	2.30

Chicago, by Telegraph.—There has been a fair demand for Cut Nails and a firm market with moderate offerings, with sales of small lots at \$2.30 from store. There is still some difficulty in making prompt shipment.

Pittsburgh.—As noted last week, May prices of Cut Nails have been reaffirmed for June shipment, with the exception that export prices were advanced 10 cents per keg. Owing to continued scarcity of Steel there is still some difficulty in getting prompt deliveries of Steel and Nails, while Iron Cut Nails are also very scarce, as some of the mills prefer to sell Bar Iron in preference to cutting it up into Nails. We quote Cut Nails at \$2.05, base, in carloads, and \$2.10 in less than carloads, f.o.b. Pittsburgh, plus freight in Tube Rate Book to point of destination.

Barb Wire.—The demand for Barb Wire shows some falling off as the season advances. Contract orders, which are being filled, and new business keep the mills employed. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. for cash in 10 days:

	Painted.	Galv.
To jobbers in carload lots.....	\$2.60	\$2.90
To jobbers in less than carloads.....	2.65	2.95
To retailers in carload lots.....	2.70	3.00
To retailers in less than carloads.....	2.80	3.10

Chicago, by Telegraph.—There has been a fair volume of business in Barb Wire in the aggregate, made up of a number of small orders, but business has diminished, as usual at this time of the year. A firm tone prevails, with prices unchanged at \$2.80 for Painted and \$3.10 for Galvanized in carload lots, and 5 cents extra for small quantities.

Pittsburgh.—There is no longer any difficulty in getting prompt deliveries of Barb Wire, as demand has fallen off a good deal recently, allowing the mills to catch up with back orders. The market is only fairly firm, and there are intimations that in exceptional cases some of the mills are offering slight concessions. We quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, \$2.60; Galvanized, \$2.90; less than carload lots, Painted, \$2.65; Galvanized, \$2.95.

Plain Wire.—The supply of Plain Wire for prompt shipment is on the increase, owing to the smaller demand. The mills are kept busy filling contract orders in connection with current requirements. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. for cash in 10 days:

Base sizes.	Plain.	Galv.
To jobbers in carload lots.....	\$2.00	\$2.40
To jobbers in less than carload lots.....	2.05	2.45
To retailers in carload lots.....	2.05	2.45
To retailers in less than carload lots.....	2.15	2.60

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9.....	Base.....		\$0.40 extra.
10.....	\$0.05 advance over base.....		.40 "
11.....	.10 "	" "	.40 "
12 and 12½..	.15 "	" " "	.40 "
13.....	.25 "	" " "	.40 "
14.....	.35 "	" " "	.40 "
15.....	.45 "	" " "	.75 "
16.....	.55 "	" " "	.75 "
17.....	.70 "	" " "	1.00 "
18.....	.85 "	" " "	1.00 "

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

Chicago, by Telegraph.—There is a gradual decrease in the number of orders received for Plain Wire, but the market remains firm, jobbing lots selling at \$2.20 from store.

Pittsburgh.—Current business in Plain Wire is only fairly large, but the mills are pretty fully employed on old contracts, on which buyers continue to specify quite

liberally. We quote Plain Wire at \$2 and Galvanized at \$2.40 in carload lots, f.o.b. Pittsburgh. Slight advances are charged for small lots.

Paris Green.—Owing to the continued demand and scarcity of Paris Green prices have advanced 1 cent per pound during the past two weeks. Green is, however, obtainable and some manufacturers are accepting orders for delivery up to July 1 at the following quotations:

	Cents.
Arsenic, kegs or casks.....	13
Kegs, 100 to 175 pounds.....	13½
Kits, 14, 28 and 56 pounds.....	14½
Paper boxes, 2 to 5 pounds.....	14½
Paper boxes, 1 pound.....	14½
Paper boxes, ½ pound.....	15½
Paper boxes, ¼ pound.....	16½

Cordage.—A moderate demand characterizes the Rope market. Merchants and manufacturers are not carrying stocks in excess of immediate requirements. Contracts which were placed at lower than present values permit jobbers to make better prices than manufacturers are offering. Quotations for small lots are as follows: Sisal Rope, of a basis of 7-16 inch and larger, 10 to 10¼ cents per pound; Manila Rope, on the same basis, 13½ cents per pound, with ¼ cent rebate for large lots.

Glass.—The American Window Glass Company are now quoting 85 to 85 and 10 per cent. discount from manufacturers' list, according to the desirability of orders. Demand for Glass has been so light that stocks purchased by some Eastern members of the Jobbers' Association have not been reduced to the extent anticipated. It will be remembered that when prices were low the American Glass Company allowed jobbers a commission of 2½ per cent. on carload business to be shipped from factory. Many large as well as small jobbers took advantage of these low prices and stocked up heavily. Since then these various jobbers have been supplying the retail trade in their immediate neighborhoods to such an extent as to be felt by the association jobbers. There is a lack of demand at this point and more or less shading of prices by jobbers who purchased from independent factories. Such quotations are usually met when there is a chance of securing orders. Under these conditions no advance has been made by the Jobbers' Association in quotations, which are as follows:

	Discount.
From store, single and double strength.....	89 %
F.o.b. factory, carload lots:	
Single and double strength.....	90 and 5 %

Paints and Colors.—*Leads.*—The cooler weather during the past week has improved the demand for White Lead in Oil. Quotations are as follows: In lots of 500 pounds or over, 6 cents; in lots of less than 500 pounds, 6½ cents per pound.

Oils.—*Linseed Oil.*—Prices on out of town Raw Oil have advanced to 65 to 66 cents per gallon, according to quantity. City Raw continues as before at 66 to 67 cents per gallon, according to quantity. Jobbing demand is fair, while large buyers are drawing on contracts previously made with crushers, some of which, it is understood, extend to September 1.

Spirits Turpentine.—The Southern market continues strong in tone, owing to the activity in export buying. Locally the market is higher and demand consequently confined to small lots. Quotations are as follows, according to quantity: Southern, 49½ to 50 cents; machine made barrels, 50 to 50½ cents per gallon.

AMERICAN SCREW COMPANY.

At a meeting of the Board of Directors of the American Screw Company, Providence, R. I., held June 10, Samuel M. Nicholson, president of the Nicholson File Company of that city, was elected president of the American Screw Company, in place of Clark Thurston, resigned.

Bernard Haggerty and F. J. Gagner have opened a new store in Adams, Mass., under the style of Haggerty & Gagner. Their stock comprises Shelf Hardware, Agricultural Implements, Sporting Goods, Tinware, &c.

JOBBER'S SPECIAL BRANDS.

THE reference in our last issue to special brands has called out a number of communications from the trade in which the matter is discussed according to the views and interests of the writers. The advantage which the jobbers secure by the sale of brands which they own and control is pointed out in one of the letters. On the other hand, the manner in which the practice conflicts with the interests of the manufacturers is shown in other letters. The tendency of the practice to lower the quality of goods is also referred to.

Why Jobbers Favor Special Brands.

The phase of the subject indicated by the above title is pointed out in the following communication from a merchant in the West who is accustomed to take a broad view of trade questions:

There is much to be said from the jobber's point of view in favor of having his own brand on the goods he handles. The most important point is that it enables him to hold the trade in the goods he introduces under his own brand. Another reason is that it permits him to secure a better profit.

MANUFACTURERS' VS. JOBBER'S BRANDS.

He was sending his men out to work up a trade in Axes, for instance. If they talked early and late about the good qualities of a Mann Axe, backing up the manufacturer's warrant by the additional guarantee of the jobber, stiffening the backbone of the retailer so he would talk and sell the Axe with such confidence as would convince consumers that they were safe in trying the new brand, he was by no means sure but that his competitor would have the same Axe the next season and reap where he had sowed. Even if he had a contract with the maker for the control of the Axe in his city for a term of years, another house were handling it in the jobbing city 100 miles away, and both houses often crossed each other and clashed in the same territory.

On the other hand, if he started out with a brand of his own, differing from the Mann Axe only in the label, every effort he made in pushing this was exclusively for his own benefit, both for the present and the future. The Axe makers of the country lost nothing by this action of the jobber. The probabilities are there were more Axes sold because of the vigor of the salesmen who knew they were selling a good article and one that would be in their control right along.

While it is a fact that the jobber was in such position that he could get his Axes where he pleased, and his customers be none the wiser for it, it is also true that changes were very seldom made, and then for weighty reason. The manufacturer with a good line of customers who handled his goods under their own brands was far more likely to hold the same trade from year to year than was the manufacturer who sold his goods under his own brand exclusively.

Now if it is to the interest of the manufacturer to sell his goods to the jobber, as all speakers at the jobbers' conventions assure us it is, he has lost nothing either in money, reputation or trade by selling his goods to the jobber under the jobber's brand, for the jobbers all know who make the goods sold in their territory and the makers are rated accordingly.

WORKING OFF INFERIOR GOODS.

But there is another reason that governs a large number of men in their use of a special label—it permits them to work off inferior goods at higher price than would be done otherwise.

The retail trade of the country have no idea of the amount of "seconds" that are sold to them as first-quality goods. Most of these are sold under fancy and fictitious brands that look honest but are meaningless. The manufacturer is not harmed by this, but the retailer is, and the consumer wronged.

The average manufacturer spends but little money in making his goods known to the retailer and con-

sumer. He makes personal effort to get the goods into the hands of the jobbing trade, and then "lets nature take its course." When he begins at the other end—teaching the consumer to demand his goods—the retailer and jobber will very quickly seek him, unless they succeed in convincing the consumer that they have "something just as good."

A Manufacturer's Argument Against Special Brands.

The following views of a prominent Eastern manufacturer will commend themselves, we believe, to the majority of our readers as a clear and reasonable statement of the bearing of the special brand practice on the interests of manufacturers. Our correspondent's reference to the spirit which should rule in the trade will also be approved, whether or not it shall be deemed feasible to carry it out in practice:

In regard to manufacturers making special brands for jobbers, allowing them to have stamped upon them a patented trade-mark, leaving the name of the manufacturer off, I think the practice a wrong one, and yet different manufacturers will view it from different standpoints. One will say "I don't care who sells the goods as long as I make them." He is living a sort of hand to mouth career, and is not looking toward establishing a name for himself or his firm. The intelligent manufacturer who has pride of character and has faith in his skill and perseverance, that it will eventually build up for himself or his firm a reputation that will win the confidence of the public and command the trade of those who sell them goods, looks at it in quite a different manner.

"Order is Heaven's first law." Everything in nature moves in its own orbit, and each has its proper relation to the other, and each in a measure subserves the other's interest.

PROPER TRADE SPIRIT.

There is no question in my mind that if trade could be run in the same way and each do his part without interfering with the part of others, and each tried to serve the others' interest by maintaining healthy rules that apply to the business in general in which they are engaged, it would be much better. In this case let the manufacturer be known to the public and to the trade as the manufacturer of his goods, and let him understand that when he stamps his name on the articles which he manufactures he stamps on it the character of his work. Give him a chance or rather the privilege to build a foundation for his future expectations, so that after the struggle of development there may come a period of restful profit. Our most successful concerns have managed their business in this way, and we can all of us name firms whose stamp means standard. There is no more reliable rule than the old one of the Nazarene, "By their fruits ye shall know them." Really, when the manufacturer consents to make a first-class article and allow a jobber to exclude his name as the manufacturer and put on the goods his own name and private trade-mark, it is very much like selling one's birthright. I do not think jobbers make anything by it in the long run. I think their interest is best served by putting the manufacture of the goods which they sell on their own merits before the public, and let them conduct their business with such energy and honorable dealing that they command the confidence of both the manufacturer and the dealer and become the natural connecting link between the two. Each thus traveling in his own orbit there would be no clashing, and resting, as they do, on their own merits, they will be stimulated with their best endeavors and business will be more of a pleasure and more profitable.

The Demoralizing Influence of Special Brands.

In the following comments a widely known manufacturer, who has relations with the trade in all parts of the country, emphasizes the tendency of the practice of having special brands to lower the quality of goods thus sold, while at the same time he points out its effect in demoralizing the market in other ways:

The way in which these special brands are handled by some of the merchants reminds us of the course

taken by a Hardware merchant who bought a large quantity of special Spoons from a manufacturer.

"PUT IN MORE LEAD."

The merchant wanted to get them at a better price; the manufacturer said he could not make a reduction unless he put more lead into the composition. "All right, use more lead," then said the merchant. Before long he wanted a second reduction and he got the same answer from the manufacturer, who was instructed the second time to use more lead, as the merchant said he must have them at a cheaper price, but still the merchant was not happy; he wanted another reduction. The manufacturer wrote him he could not possibly submit to a further cut. "Put in more lead," wrote the merchant. "I can't," answered the manufacturer, "the last lot I sent you were all lead."

JOBBER AS MANUFACTURERS.

There seems to be a good deal of inconsistency in the way some of the large Hardware merchants treat the manufacturer; they insist that the manufacturer shall not sell to any one except to the wholesale trade, yet they wish to have special brands put on the goods they buy, representing them to be the manufacturers. They frequently go into manufacturing certain lines in competition with well established manufacturers, and in certain ways imitate their goods or use their own special brands on these, thereby getting the benefit of the reputation they have made by having in the first place good goods of the reliable manufacturer.

ENCOURAGING COMPETITION.

There is another way in which many of the merchants injure the manufacturer, and that is by encouraging every "Tom, Dick and Harry" who comes to them and proposes to go into the business of manufacturing. They say, "Oh, yes, we buy a large quantity of these goods, and there is a large sale for them," when the facts are that at that time the manufacturers engaged in that business can produce more of the goods than are required, and very likely they place an order for a very large quantity at a price which is less than they can be produced for, and in this way they do much injury to all concerned. They injure the old established manufacturers, injure the new concerns who start in because they cannot produce the goods at what they have sold them for, and very likely injure themselves by getting a quality of goods that is inferior, and then, worst of all, injure the consumer, because he gets a worthless article and very likely buys it under a special brand.

The Remedy Is With the Manufacturer.

This point is brought out in the following communication from one of the largest manufacturers in the country, who does not, however, indicate much confidence that manufacturers will be disposed to assert themselves for the correction of what is an acknowledged evil:

We have read your article on special brands in your issue of the 5th inst. You have told the manufacturers' story fairly and well, and that feature of the matter hardly needs any further treatment. The remedy for the evil lies with the manufacturers alone, but, like other ills which they suffer, and which require concerted action to cure, experience shows that they would rather continue to suffer than come together for combined and effective work.

IMPERIAL CUTLERY WORKS.

IMPERIAL CUTLERY WORKS, Avondale, N. J., have purchased a large plant at Avondale, N. J. (5 miles from Newark, on the Erie Railroad), where they have made several large building additions, added extensive machinery and where, with new and improved facilities, they will, in the future, be better able to take care of their patrons and insure them more prompt delivery than they have been able to give in their former more cramped quarters. They have added several new patterns to their already extensive line, including Stag Handle Knives and Forks, of which they have added eight new patterns.

Nebraska Retail Hardware Dealers' Association.

ANOTHER very promising State association has been formed in Nebraska, the organization meeting taking place in Hastings on the 3d inst.

A few weeks ago the Hardware merchants of Hastings and Holstein decided there was need of a retail association. Alexander F. Meyer of Hastings was chosen secretary of the movement, and the other dealers agreed to share the expense of ascertaining the sentiment in the trade. Mr. Meyer visited several towns and wrote many letters. So much encouragement was extended that a meeting was called at Hastings on June 3. In the meantime correspondence took place with the National Retail Hardware Dealers' Association, and they were invited to send a representative. They responded to the call and were represented at the meeting by their secretary, M. L. Corey, who was present throughout and who materially assisted in making the meeting interesting and successful.

Mr. Meyer called the assembled merchants to order, and after stating the object of the meeting, C. K. Lawson of Hastings was chosen temporary chairman, and Mr. Meyer temporary secretary. The question of forming a State association was then submitted to the gathering, and every dealer present expressed himself as favorable to the project. The following committees were appointed, to report at the afternoon session:

Committees.

CONSTITUTION AND BY-LAWS: C. D. Morton, Omaha; G. E. Isamson, Hastings; Kimel Barnes, David City; J. C. Cornell, Ord; J. B. Hunter, Aurora.

RESOLUTIONS: H. Heuke, Grand Island; Thos. Nelson, Diller; Fred. Binderup, Hastings; Theodore Lindholm, Omaha.

NOMINATIONS: J. A. Peterson, Oakland; A. E. Small, Minden; W. E. Jakeway, Kearney.

TEMPORARY EXECUTIVE COMMITTEE: Alexander F. Meyer, Hastings; Theodore Lindholm, Omaha; W. E. Jakeway, Kearney.

Address of M. L. Corey.

The balance of the forenoon session was occupied by an address from Mr. Corey, who gave a history of various State associations and their growth, culminating in the formation of the National Association in 1900. He explained that the National Association now comprises 15 States, and that the silent influence alone of this body of dealers was of itself sufficient to check many of the evils that had grown up in the Hardware trade. He gave an idea of the work which is being done by the association, illustrating by records of particular cases. Mr. Corey's remarks were listened to with close attention and were much appreciated.

Afternoon Session.

At the afternoon session constitution and by-laws were unanimously adopted, as well as the following resolutions:

Resolutions.

Resolved, That every member present shall use every effort to enroll every legitimate Hardware dealer in the State so as to make our association a success.

Resolved, That the thanks of this association are hereby tendered to the Hardware dealers of Hastings and Holstein for the able manner in which they worked to make this meeting a success; especially to Alex. F. Meyer, to whom much of the credit for this organization is due.

Resolved, That the Nebraska Hardware dealers are opposed to the Parcels Post bill, and will use every honorable means to defeat this measure.

Resolved, That we recognize and appreciate the interest shown by the National Hardware Dealers' Association in sending their secretary to assist us in organizing—that Mr. Corey has contributed very much to the success and interest of this meeting and we hereby extend our thanks by a rising vote.

The Officers.

The following officers were elected:

T. W. MORTON, Omaha, president.
C. K. LAWSON, Hastings, first vice-president.
W. T. COLEMAN, McCook, second vice-president.
J. C. CORNELL, Ord, third vice-president.
HARRY HALL, Lincoln, secretary and treasurer.

The next meeting will be held at Lincoln. The advisability of holding a midsummer session in August

is being considered by the Executive Committee, many of the members of the association strongly favoring the idea.

The Attendance.

The roll call showed 51 firms represented. More than 25 letters were received from other dealers declaring themselves in favor of an association, but intimating their inability to attend the meeting. The present membership of the association, representing only those in actual attendance at the meeting, is as follows. It will be observed that it is distributed pretty thoroughly over the State:

C. A. Peterson, Oakland.	H. Heuke, Heuke & Co., Grand Island.
Kimel Barnes, David City.	Thos. Nelson, Diller.
W. E. Jakeway & Co., Kearney.	C. F. Schlegel, Kensaw.
L. F. Holloway & Co., Freeman.	M. A. Harglerode, Holstein.
A. E. Small & Co., Crete.	E. L. Hayhurst, Loup City.
A. F. Lind, Newman Grove.	W. T. Coleman, McCook.
P. F. Conant, Benedict.	M. E. Haight, Crete.
N. F. Loum, Phillips.	B. H. Bruns, Glenville.
James Morton & Son, Omaha.	A. Garvin, Foreman.
Theodore Lindholm, Omaha.	Hill Bros., Lincoln.
Dunning Hardware Co., Omaha.	Frank E. Lahr, Lincoln.
J. C. Cornell, Cornell Bros., Ord.	Humphrey Hardware Co., Lincoln.
E. C. Kinslow, Kinslow Bros., Wisner.	Ernst Hoppe, Lincoln.
Julius Dignow, Dignow & Beckner, Wisner.	Henry Velth Co., Lincoln.
Frank Stanton, Clay Center.	J. F. Gohmer, Seward.
J. E. Buell, Glenville.	Frank Hacker, Friend.
Alex. F. Meyer, Hastings.	W. W. MacCashland, Fairfield.
Geo. E. Isman & Co., Hastings.	D. F. Phillips, Fairfield.
C. K. Lawson Hardware Co., Hastings.	John Zimmerer, Seward.
Binderup Hardware Co., Hastings.	Haws Hardware & Furniture Co., Minden.
A. F. Eberly, Octavia.	T. J. Hoerger, Sutton.
R. G. Hall, Fairmont.	C. Peterson, Minden.
J. B. Hunter, Aurora.	Max Uhlig Hardware Co., Holdrege.
Fred. A. Miller, Aurora.	G. J. Stoetsel, Stoetsel & Joerdel, Reemer.
H. B. Moore, Prosser.	H. T. Moore, Moore & Co., Aima.

SATURDAY HALF-HOLIDAY.

BBROWN & SHARPE MFG. COMPANY, Providence, R. I., announce that commencing June 7 their works will close at 12 o'clock on Saturdays, which arrangement will be continued during the warm weather. In order to avoid delay in the delivery of goods and consequent annoyance they request their customers to arrange their orders, as far as possible, so as to reach them in time for early Saturday shipment.

The following Toledo, Ohio, Hardware concerns have agreed to close at noon on Saturdays from June 7 to August 30: The Stollberg & Clapp Company, Bostwick-Braun Company, the National Supply Company, Jos. F. Grosswiler Supply Company, Ketel Hardware Company, Schunk-Marquardt Company, W. T. Hoffman, the Norton Paint & Hardware Company, the Star Hardware Company, F. G. Gemple, the Elmer E. Dale Supply Company, and the Heavy Hardware Company. It is expected that the other houses will get into line before long.

THE OSBORN MFG. COMPANY.

THE OSBORN MFG. COMPANY, Cleveland, Ohio, issue catalogues Nos. 101 and 102. The former is devoted to a line of Brushes and Brooms, together with certain Foundry Supplies which are handled by the Hardware trade. The line of Brushes and Brooms includes Window and Counter Brushes, and Push Brooms, which are coming more in demand as smaller cities and towns adopt paved streets. Catalogue No. 102 illustrates Brushes and Brooms designed especially for foundry and manufacturers' use, together with a line of Foundry Supplies, including Shovels, Riddles, Bellows, &c.

THE CLYDE CUTLERY COMPANY.

THE CLYDE CUTLERY COMPANY, Clyde, Ohio, manufacturers of Cutlery and Hardware Specialties, owing to increase in their business, have found it again necessary to double the capacity of their factory. This spring they have made two additions to their plant, which was shut down from May 12 to May 26, installing new machinery and making necessary changes. The factory was started again on May 26, and is now running 12½ hours daily.

TRIBUTES TO PETER MCCARTEE

A SPECIAL memorial meeting of the members of the Hardware Club was held in the board room of the club, Thursday, June 5, when appropriate action was taken on the death of Peter McCartee, a former president and governor. Addresses of an appreciative character were made by E. C. Van Glahn, president of the club; Charles Putzel and others, and the following committee appointed to draft a suitable memorial indicating the high regard in which Mr. McCartee was held by the club: Charles Putzel, Frank M. Brooks and William Bishop.

MR. VAN GLAHN'S ADDRESS.

This meeting has been called, as you know, for the purpose of giving, in so far as we may, fitting expression to our sense of the loss sustained by the club in the death of our dear friend and valued fellow member, Peter McCartee.

The fact that such a meeting has been called by the general request of the members is in itself an evidence of the regard you had for him, and knowing Mr. McCartee as we all did, it is a peculiar pleasure to thus manifest our affection and admiration for the man and to honor his memory.

And yet it is not necessary that we should adopt any formal set of resolutions in order to perpetuate his memory, for who among us can ever forget that genial personality—that gentle man—that manly man—that warm, hearty handshake, that magnanimous heart which always prompted him to say a word of cheer or of comfort or a kindly greeting to every one he met? How fast and how easily he made friends, and when made how he bound them forever to him with hooks of steel!

In the Hardware trade he will always be remembered as a man of absolute, unwavering integrity, of great and enduring fidelity to duty, and of firm and unflinching devotion to the right. Honest, earnest and sincere in every action, he was a man of good thoughts and therefore a man of good deeds.

How we shall miss him in this club! From its very inception Mr. McCartee's strong personality was inseparably linked to it. Mature enough for counsel, he was ever young enough for prompt and vigorous action, from first to last a devoted worker, and a firm believer in its worth as an organization.

To attempt to enumerate at this time the varied forms of his activity in this club would be impossible. His strong mind and hand and heart were felt and recognized in all its departments, first as an organizer of the club, then as chairman of its first House Committee, then as president for a longer period than any one else has held the office, and always to the last its wise counselor and stanch friend.

But Mr. McCartee was more than a Hardware man, he was much more than a club man merely—he was one of God's noblemen whose benign influence could not be measured by any such narrow boundaries, for it extended into other circles, secular and religious. And oh, how it must have permeated and dominated that hitherto joyful home, now sorrowful and lonely!

Of that I may not speak, nor will I attempt to speak of him in his personal relationship to me. I had long since learned to love him and to trust him implicitly, and with me, as no doubt with many of you, he leaves a tender, fragrant memory which I shall long cherish.

Gentlemen, this meeting is yours, to speak if you wish, and to make record of your esteem for this loyal comrade whom an all wise Providence has so recently removed from our ranks.

MR. PUTZEL'S TRIBUTE.

A few hours after leaving his life-long associates on Wednesday of last week that prince among good men, Peter McCartee, was suddenly taken from the roll of membership by the grim hand of death.

If he could speak to us now, would not his sentiments be, "Cherish my memory if you will, but do not grieve for me. I was happy among you and accomplished some good, but I tried to do more than I accomplished. My maxim was, 'Live and let live.' I wanted to be among peaceful surroundings and help others to get there. My work was the best I could do, but better work was my aim?"

Yes, we knew that of you, Peter McCartee, and more. You were a genial companion, loving, lovable and beloved by all worthy of love. You were a veritable sunbeam to your friends. The world is better for having had you for threescore years and ten. You were ever a welcome visitor, ever glad some, winsome and joyous. Your spirit was youthful, your life optimistic, and, therefore, healthy. I speak of you as you were known

among your business associates and at your noonday home, the Hardware Club.

How happy you were to help build up that club. What a cheery and cheerful president! How pleased the members were to have you meet their guests, and they in turn to meet the president of the club! How you entered into every good and proper movement! What a delight to all to be your helpmate!

Friends, you know full well the loss you have sustained in the death of Peter McCartee—what a hail fellow has left your midst; what a delightful personality has been suddenly removed from a large circle of admiring friends. He was as unique among you as he was simple, modest, genial and congenial—he was a true gentleman whose life was a bright page.

Peter McCartee, hear that we shall miss you, that your absence will leave a hiatus, that your place will be left vacant, but you shall be wreathed in our memory by what you were to us, and garlanded in and with that dark, deep, poetic green which your kind and sympathetic heart knew so well and dwelt in so long. The club takes a farewell of you, Peter, a farewell to Uncle Peter and a farewell to Peter McCartee, its revered president, its honored governor and its true friend—farewell!

Memorial Resolutions.

The following memorial reported by the committee named above expresses the high regard and warm affection in which Mr. McCartee was held. It has been ordered entered upon the minutes of the club and a copy sent to the family of Mr. McCartee:

That the Hardware Club has met with a great loss in the death of its former president, Peter McCartee, whose worth and work were always recognized, and will ever be remembered during the life of this organization. That he was among the most earnest, active and intelligent founders; a patient and untiring governor, and for three terms a faithful, capable and competent president, whose offices were so performed as to cause him to be beloved by every member, and whose cheerfulness endeared him to the many guests and friends of the club. These expressions do but faintly convey the feelings of the individual members of the club, who were attached to Mr. McCartee by his many fine traits of character, his geniality, sociability and ever constant affability, so as to make him a lovable companion and render association with him most delightful at all times.

The club, through its representatives, send its sympathy and condolence to the members of the family of Peter McCartee, hoping thereby in some degree to assuage their grief with the knowledge of the high respect and fullest appreciation in which he was held by the Hardware Club. Mr. McCartee stood in the front rank of its large membership and was conspicuous among his associates in the possession of all that goes to make a club a pleasant meeting place. He will ever be recalled as a man among men, as a most faithful officer and as a kind and affectionate friend.

Resolutions Adopted by Stanley Works.

The following just and appreciative tribute to Peter McCartee was adopted at a special meeting of the Board of Directors of the Stanley Works, New Britain, Conn., June 9:

Peter McCartee, vice-president and a director of this corporation, died at his home in Brooklyn, May 28, 1902, at the age of 74 years.

We, the directors of this corporation and his lifelong associates, meet to pay our tribute of love and respect to his memory and to testify to the ability and fidelity that have distinguished a continuous service of 45 years with this corporation; to the faithful, intelligent and efficient performance of his obligations as an officer and director; to his help and co-operation as a wise counselor and true friend, and to our deep sorrow for the loss we have sustained.

His was a spotless character, a kind and lovable disposition, generous, frank, open hearted and unassuming; hospitable and genial in his intercourse with his fellow men; he had an attractive personality, a well balanced mind, coupled with sound judgment and strict integrity; was a wise adviser, a true friend, faithful to the interests he served, faithful to his convictions of right and wrong, faithful to his church, faithful and devoted to his family—a Christian gentleman.

We also extend to the family of our friend our sympathy and consolation in the sorrow and great bereavement that have come to their home.

Thus do we make record of the love and esteem we have for our departed friend and business associate, and we shall ever cherish his memory with respect, admira-

tion and affection, in commemoration of which we order this minute to be spread on the records of the corporation and a copy sent to his family.

THE CHAMELEON WHIRLIGIG.

WHILE advertising the Sherwin-Williams Paints in their show window, J. H. Trippe's Sons, Canton, Pa., attracted particular attention by having a large Chameleon Whirligig in the center of the window. This Whirligig, which is shown in Fig. 1, consisted of three cardboard disks, each 24 inches in diameter. The cardboard used was of the same kind as friction pulleys are made from, and it was bought at a neighboring machine shop. The different segments of the disk were painted different brilliant colors. These disks were fastened to a large wooden disk, 1 inch thick and 33 inches in di-

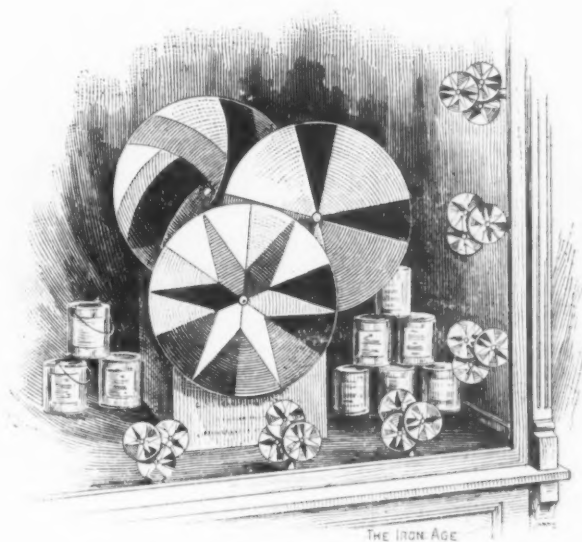


Fig. 1.—The Chameleon Whirligig in the Window.

ameter, which was an extra bottom to a rotary washing machine that was around the store. Holes were made in the center of each of the colored disks through which stove bolts were passed, blocks of different thicknesses being used to keep the wheels from interfering with each other. The large wooden disk was fastened to a shaft, at the other end of which was an 8-inch pulley, over

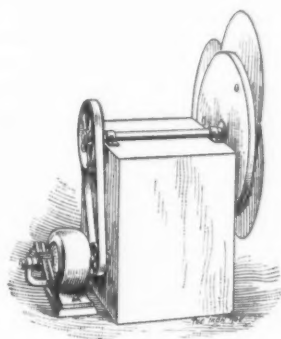


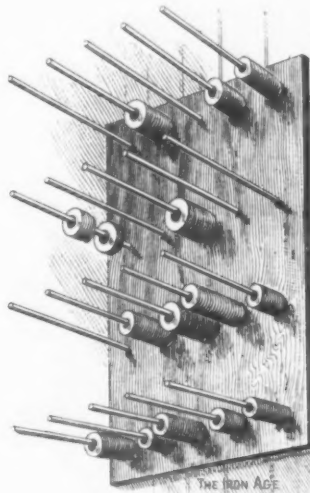
Fig. 2.—Side View of the Whirligig, Showing Construction and How Motor is Attached.

which ran a 1-inch belt connected with a 2-inch pulley on a $\frac{1}{4}$ horse-power electric motor making 800 revolutions a minute. The shaft of the Whirligig was fastened on an empty box, behind which the motor was placed, as shown in Fig. 2. The rapid revolution of the Whirligig produced constant change of color and made many people watch the window. As a border at the sides and top and bottom of the window, small Whirligigs were fastened whose cardboard disks were about 3 inches in diameter. These were given to the children after the display was over. On the back of each of these Whirli-

gigs was the inscription: "A few of the colors found in S. W. P."

A RACK FOR WASHERS.

A RACK for holding Leather Washers of different varieties and sizes is shown in the accompanying illustration. It consists of a piece of varnished pine board



A Rack for Washers.

into which round iron rods are stuck, as shown. Over these are placed the Washers. This rack is securely fastened to the wall and serves not only as a good means of keeping this line, but also of displaying it.

WHY NOT BETTER HARDWARE?

BY W. F.

HOUSES built to-day are finished more attractively than those put up a few years ago. It is easy to account for this. A glance through the magazines that circulate in the homes will show carefully written and artistically illustrated articles on home building, home improvement, home decoration and kindred subjects. There are also many publications devoted exclusively to home building which are eagerly read by those about to build.

In the houses put up nowadays, even those of moderate cost, attention is given to wood work and mantel and chandeliers and heating apparatus, but the Hardware receives little consideration; anything seems to go. The owner of the house is not satisfied, but he does not know much about Hardware and cannot tell just what is wrong.

How often do we see on the outside of a front door an iron or steel Escutcheon, with its surface covered with rust! It is cheaper than bronze metal at the start, but there would be economy in the use of one of the low priced bronze metal designs, of which there are many on the market. The Hardwareman should advise his customer and help him select goods that will be durable and better suited to the class of work under way.

And so many times we see a \$5000 house trimmed with Hardware that is not worth putting on a \$1000 house. In most cases the owner is not thoroughly posted. The mantel man shows him samples and pictures, and the owner selects suitable mantels; the gas fixture man talks about chandeliers as furnishings, shows his samples, and the owner selects chandeliers that add to the beauty of his home. The Hardwareman has the same opportunity; the right kind of Hardware adds to the attractiveness of the home, just as the mantels or the chandeliers do. Let the Hardwareman show his samples and pictures, talk a little, push a little, and he will sell better goods; there is more profit in the better goods than in the cheap stuff so often used. And his customer will be satisfied, too; the difference in cost to him will be slight, the difference in goods in his favor will be great.

NOTES ON FOREIGN TRADE.

BRITISH LETTER.

Office of *The Iron Age*, HASTINGS HOUSE,
NORFOLK ST., LONDON, W. C. }

The Week's Hardware Trade.

THE home trade still continues quiet and the overseas trade, while in some parts active, is not particularly encouraging. At home the unsettled weather, coupled with financial considerations, keeps the building trade in a bad way, with the result that Builders' Hardware is in poor demand. There has been some little stimulation in Improved Agricultural Implements, in consequence of the proposed corn tax, but it amounts to very little. The cold and wet spring we have had over here has proved unfavorable to most of the manufacturers concerned with irrigation, but a good deal is being done in draining and fencing work, and the demand for Spades and Forks and other Agricultural Tools and Implements, particularly in the eastern counties, is fairly satisfactory. The railway companies are restricting their orders just now for all kinds of Tools. On the other hand, the drought in Australia, while exercising a generally depressing effect upon exports to the commonwealth, has stimulated the demand for Pumping and Irrigating Machinery, of which a large proportion is made in the district of Birmingham and Wolverhampton. Spoon and Fork manufacturers are busy, but otherwise the electro plate trade remains inactive. There is a brisk business doing in Enameled Hollow Ware and enamellers in all departments are exceedingly well employed. I have repeatedly drawn attention to the pressure upon makers of Enameled Advertising Plates, and this continues. In speaking to a friend about this trade in London this week and asking him why he did not get an American agency for this line of goods, he explained that it necessitates the employment of a special staff to cultivate that particular trade and therefore he did not feel inclined to undertake the responsibility. He is probably right; at the same time it is a little curious to observe that while American makers excel in this line of goods, they are doing nothing in this country, while the English manufacturers are working at high pressure. On overseas account good orders are coming from South Africa and South America. Large orders have been received from Canada for Hardware during the past week, although it is recognized that the lion's share of this business is now going to the United States. The orders that have come from Canada are for general Hardware, Bedsteads, Fishing Tackle and finished goods. An improved trade is also being done with Japan, which is ascribed by some to the Anglo-Japanese treaty. This I very much doubt. Political treaties, as a general rule, have but little influence upon trade. English exporters still hold the trade with New Zealand, but it is not so easy to maintain their hold upon Australia. The bone and horn trades are, if anything, declining. The introduction of celluloid, xylonite and other compositions for the handling of Table Cutlery has been a severe blow to these old staple industries of Sheffield. Twenty years ago there were numerous large firms making substantial profits, but to-day the number has been reduced and competition is so keen that increased discounts have had to be given in all but the very best class of natural handles. This has militated seriously against many of the old established houses, and as the artificial material increases the bone and horn branches tend to be reduced.

Wire Netting.

A discussion in the *Ironmonger* upon the way to sell Wire Netting has led to some interesting statements. It has been suggested that Wire Netting should be sold by weight, and it is urged in favor of this that a number of Wire Netting manufacturers are prepared to sell by weight. As a matter of fact, however, the best firms will not entertain the idea for a moment. On this point the well-known house of Boulton & Paul, Limited, say: "There is no 'standard weight' of Wire Netting recognized by the trade. There was a meeting in the latter

part of 1892 of some of the makers of Netting, who decided upon a list of weights, but ourselves, Barnard, Bishop & Barnards, Limited, and J. Lysaght, Limited, did not attend the meeting and have steadily refused to be governed by its decision. It was felt by us that it was practically impossible to draw up such a list and adhere to it, because weights vary from so many causes. First, the Wire drawer will not guarantee an exact size to millimeter, and demands an allowance of variation more or less. Again, the weight will vary in the process of galvanizing; so that with these and other causes we felt that it was a practical impossibility to give our adhesion to a trade weight list. Nor do the trade recognize the expression 'true to gauge,' as it is impossible to adhere to a uniform size, and, as we have said, there will be variations owing to the wear of the draw plates in the drawing of the Wire. This will account for an apparent mixture of sizes in a roll of Netting. In the gauging of Netting it is recognized by the trade that if the Wire cannot be pressed into a given number gauge it is therefore a fair size for the next. For instance, if the Wire is somewhat scant No. 10 and cannot be fairly forced into No. 10, it is therefore fair No. 18. This is why the trade do not say 'true to gauge,' but 'fair to gauge.'" As showing the variations in the weight of Wire Netting an ironmonger has been weighing nine different rolls of Netting and checking the weights with the quasi official rates mentioned in the "Ironmonger Diary." The result works out as follows:

1/2-inch....	24 inches	× 20 G.	60 pounds.	65 pounds.
3/4 "	24 " "	× 20 G.	45 " "	48 " "
1 "	36 " "	× 20 G.	67 " "	61 " "
1 "	24 " "	× 19 G.	40 " "	41 " "
1 "	36 " "	× 19 G.	60 " "	59 " "
1 1/2 "	36 " "	× 19 G.	48 " "	42 " "
2 "	36 " "	× 19 G.	33 " "	32 " "
4 "	48 " "	× 9 G.	38 " "	41 " "
4 "	36 " "	× 16 G. C. S. Sheep	47 " "	45 " "

9 rolls, total.....438 pounds. 429 pounds.

The first column of weights is that weighed by the retailer, while the second column is that mentioned in the "Ironmonger Diary." It will thus be seen how impossible it is, so far as English makers are concerned, to sell Wire Netting by weight. The same experimenter remarks that he would not be surprised if some of the keen cutting people bought 2 1/4-inch Netting to sell at a 2-inch price and 1 1/2-inch to sell at 1 1/2-inch price, and reduce the gauge if possible, say, 19 to 20, because not one out of 100 customers ever measures the gauge upon receipt. No doubt the nature of the Wire gauge makes it possible for this to be done, but, upon the other hand, the firms who make the Wire gauge are recognized to be of the highest probity. I am sure there is nothing in the suggestion. At the same time, if competition were to become keener in the Wire Netting trade, it might possibly be an advantage if some firm were to be able to say with confidence that their weights would be certain to work out to quotation.

American Trade Methods.

I cannot forbear to quote from an American consul, who relates the following incident:

A Hamburg commission merchant, in the spring of 1900, "took up" American Builders' Hardware—Hinges, Bolts, Locks, Window Fastenings, &c. He formed connections with two first-class manufacturers in the States, imported a full line of samples, and had a handsome portable cabinet made, with drawers and doors hung and equipped with the new Hinges, Locks, Knob Rings, &c. This he took with him on a canvassing tour to illustrate the superiority of the American fixtures to German Hardware merchants. In the course of the trip he placed 12 orders, on one of which the buyer, in order to secure prompt delivery, paid half the amount of the bill in advance. The orders were duly sent, but reached the American manufacturers just in the busy days of April, 1901, when the demands of the home market were especially urgent. As a result, not one of them was filled, letters and telegrams of inquiry were not even answered, and after waiting until June the Hamburg merchant was obliged to refund the money he had collected in advance, acknowledge that he could not deliver the goods, and lose the whole expense of his trip, and naturally all chance of doing any future business with the same customers.

I quote this for the purpose of again reminding any readers of *The Iron Age* who are exporters that considerable damage is being done to American prospects on this side of the Atlantic by the light hearted and casual way in which the export trade is treated by so many

Americans. I cannot too often emphasize the fact that the export trade is worth having, but if it is to be obtained it can only be by placing export business upon an equal footing with the home trade.

Another point to be borne in mind is that foreign buyers will not submit to extreme fluctuations in price. A case of this sort came under my notice this week. An American firm wrote to their agent advancing prices 5 per cent. He promptly wrote back, pointing out that this advance of 5 per cent. in a market where the tendency of prices is all the other way might prove disastrous. He begged them to stick to the old price, and on his part undertook to maintain that price when the home market quotations were below it. The firm, however, insisted upon their advance, with the result that the trade is slipping away from them. In my opinion this is not good business.

The London County Council and Foreign Made Goods.

Some interesting correspondence has been published between the London County Council and the National Electrical Manufacturers' Association. The secretary of this association, writing to the clerk of the County Council, calls attention to a recent specification for Electric Lamps, in which it is stipulated that the Lamps must be of English make. Further, the labor requirements specified can only apply to goods made in this country. Notwithstanding this, a recent contract was awarded to a firm whose Lamp works are in Vienna. The secretary asks for an assurance that English made Lamps only will be accepted in the future. The clerk of the County Council, in replying, states that the Council were aware that the Lamps supplied under the contract would be foreign made. It is now proposed that when next tenders for Electric Lamps are issued competing firms will be asked to send in two quotations, one for English made Lamps and the other for foreign made.

Commercial Travelers in Russia.

The Russian Ministry of Finance has issued the following circular:

Foreign commercial travelers for firms not established in Russia have to take out in the name of the firm they severally represent a trading license at a cost of 150 rubles (about \$105), whereby also the provincial and municipal fees (not to exceed 20 per cent. of the cost of the license) are to be paid. Jewish commercial travelers connected with firms registered in accordance with the respective law of the country, and who, in virtue of the law of March 14, 1901, have received passports *issued* by Russian consuls, may enter Russian territory without the permission of the three ministries in question, which was formerly necessary; but they must procure a trading license in the name of the firm they severally represent at a cost of 500 rubles (about \$355), and also one in their own name for 50 rubles (about \$35).

AUSTRALIAN NOTES.

FROM OUR SPECIAL CORRESPONDENT.

THE Hardware trade is quiet and Australians are sitting tight in anticipation of a dull winter. The drought is pretty general throughout the continent. Flour, usually quoted about £6 10s. a ton, is now £9 10s. and over. There are only about 20 ships in Melbourne port, where a few months ago in the busy season we had 80 and more. The next few months do not possess a rosy outlook, but we shall no doubt pull through in characteristic cheerful Australian fashion.

A few new companies are being formed, one, the Federal Nut & Bolt Works of Sydney, to manufacture goods as per their title; capital, £10,000. This concern should find a good home market for their products. The Australian Electric Free Wiring Company, Limited, have been registered in Melbourne to supply electricity to private houses, &c., either for purchase outright or on the hire system; capital, £1600.

Queensland reports are distressing. The drought has now been on for several years, and nothing but prolonged and consistent rainfall can save the pastoral industry. Sheep runs have dwindled from the hundreds of thousands of head to tens of thousands and even to single thousands, and it would take at least two or three wet seasons to restore the country to anything like a normal state.

New Zealand is the most prosperous part of Australasia at present, and trade there appears to be running in healthy, legitimate lines. She is not in our Commonwealth and is perhaps wise in her decision to hold aloof, at any rate for the present.

Australia's natural industries are certainly under a cloud at present, and perhaps our one crumb of comfort is to be found in the fact that in adjusting the tariff the Ministry appear to have underestimated the revenue producing power of the country, and the indications are that we shall not be faced with a deficit, in spite of our extravagant system of government.

The Melbourne Marine Board have been considering the question of importing testing machinery at a cost of £2570 (English prices), as at present the law regarding the testing of cables, anchors, &c., cannot be complied with, although local shops are equal to doing repair work of this class. The Marine Board concluded that the revenue would not cover interest on capital and working expenses, so the board and the State Government, which framed the law, are somewhat at variance. Can your American shops solve the difficulty of price?

Tariff Tinkering

Is still going on, and the bill now before the Senate is to be discussed on many lines relating to Hardware. One of the New South Wales Senators has given notice of various amendments. It would be waste of time and space to enumerate details; they will be duly advised as they come along. But the continued uncertainty is most harassing to business men.

Wire Netting.

The Sydney Labor Council are urging the establishment of a State Wire Netting factory to restrain the national rabbit, in consequence of the Government's intention to supply about £300,000 worth of Netting to pastoralists on the installment system. There is not much possibility of the industry being State established, and the chances are all the stuff will be locally made by private firms or imported.

Sydney.

A recent flying visit to the city of the beautiful harbor shows business, if anything, a trifle more brisk than in Melbourne. This is more noticeable in Builders' Hardware, which has of late been moving off in good style, due chiefly to the large number of suburban residences being erected. The much advertised bridge across the harbor is still a dream of the future, although it is fondly hoped that tenders will be called within the next few months. The electric lighting scheme is to be pushed on at once, and tenders are to be immediately called in connection therewith by the consulting engineers in London, Preece & Cardew. The latest machinery is to be installed, with engines of 2500 horse-power and provision for extension to 25,000 horse-power. This will create a large demand for electrical accessories.

An Exhibition

at Melbourne is in the early stages of arrangement at the hands of the enterprising Jules Joubert, a man with perhaps as wide an experience of management of exhibitions as any one living. The time for preparation is exceedingly short, as it is announced that the show will be opened at Melbourne Exhibition Building on November 1. M. Joubert doubtless knows his business, but it seems to us that he would have done better by giving longer notice of his intentions. So far as can be learned the forthcoming exhibition is not receiving any Government support. Australia has had many of these exhibitions, and it is a debatable point as to how far this method of advertising is profitable to the exhibitor.

WIRE TACKS FROM GERMANY.

SIMON W. HANAUER, United States Deputy Consul-General at Frankfort-on-Main, sends us the following advices concerning Wire Tacks manufactured in Germany:

Wire Tacks have become an important item in German exports. The amount sold last year to foreign

countries aggregated 54,477 metric tons, each equal to 2,204 English pounds, valued at 11,440,000 marks (\$2,745,600), being over 16 per cent. in excess of the exportation of the preceding year. These goods were distributed as follows: England, 31.8 per cent.; Japan, 14.1 per cent.; Australia, 9 per cent.; Turkey (in Europe), 6.1 per cent.; Holland, 5.4 per cent.; China, 4.3 per cent.; British India, 4.1 per cent.; Denmark, 3.4 per cent.; Egypt, 2.5 per cent.; Russia, 2 per cent.; Bulgaria, British Malacca and Argentina took from 1 to 2 per cent. each. The manufacture of German Tacks is now controlled by a trust.

AMONG THE HARDWARE TRADE.

J. S. Ogden & Bros., wholesale and retail Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c., Ashland, Ky., are now in possession of their handsome new store. The building is a three-story brick structure, 25 x 133 feet, with stone front. It is equipped with an hydraulic elevator. Since moving to the new premises the firm have added about \$3000 worth of stock, and expect to add as much more during the coming season.

Christensen & Shaw, dealers in Hardware, Stoves, &c., Ballard, Wash., have disposed of their business to Scram & Gordon, who will continue at the old stand. William Christensen of the former firm has purchased the stock and good will of T. B. Lambson, Ellensburg, Wash., and will continue that business under the style of Ellensburg Hardware Company. The stock consists of Hardware, Stoves and Tinware, and will be materially increased by the new proprietor.

A. C. Candor & Co. are successors to the late Joseph Candor in the wholesale and retail Hardware, Stove, Agricultural Implement and Sporting Goods business in Lock Haven, Pa.

Bales & Winchell have lately engaged in the General Hardware and Farm Implement business in Blinger, O. T.

The Hardware store of Lewis S. Davis, Canajoharie, N. Y., was slightly damaged by fire a short time since.

Wilson Hardware & Furniture Company, with a capital of \$10,000, have succeeded B. G. Wilson & Co., Rocky Ford, Col.

H. M. Kellogg has disposed of his Hardware, Stove, plumbing and heating business, at Cortland, N. Y., to Cramer & Spencer, who will continue at the old stand.

After 35 years' consecutive business under his own name A. D. Jones, Springville, N. Y., has admitted a partner in the person of W. H. Morgester, formerly of Sardinia, N. Y., but lately of Pittsburgh, Pa. The style of the new firm will be Jones & Morgester.

In a large fire at Croghan, N. Y., several weeks since the Hardware store and tin shop and part of the stock and tools of F. J. Garnham were destroyed. The total loss above insurance and stock saved was about \$2000. Mr. Garnham has resumed business in temporary quarters.

The old firm of French & Hahnenkratt, dealers in Hardware, Phillipsburg, Kan., have gone out of business. H. L. Hahnenkratt has located at Washington, Kan., and entered into partnership with L. C. Ames, and will conduct the Hardware, Stove, Tinware and Sporting Goods business at that point under the style of Hahnenkratt & Ames.

Several weeks since the statement was made in this column that the large wholesale and retail Hardware and machinery business of Geo. W. Brown, Jr., Hillsboro, Ill., had been sold. We are, however, advised that the deal was not consummated, and that the firm are still looking for a buyer. They have decided to engage in the manufacturing business about July 1.

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AMERICAN HARDWARE MANUFACTURERS' ASSOCIATION.

THE programme for the second convention of the American Hardware Manufacturers' Association, which will be held at Atlantic City, N. J., June 17-20, has been issued. It indicates that arrangements have been made for the discussion of several important questions relating to trade interests, and the gathering promises to be both interesting and profitable. The following

Reception Committee.

has been appointed to look after the comfort of the members and guests of the association and in general to promote the spirit of hospitality and fraternity:

HENRY B. LUPTON (chairman), Oliver Iron & Steel Company, Pittsburgh, Pa.
FRANK BAACKES, American Steel & Wire Company, Chicago, Ill.
GEORGE P. HART, the Stanley Works, New Britain, Conn.
TOM ALMGILL, G. & H. Barnett Company, Philadelphia, Pa.
EDWARD INGALLS, the Atha Tool Company, Newark, N. J.
FRED. S. MERRICK, Standard Horse Nail Company, New Brighton, Pa.
E. G. BUCKWELL, Cleveland Twist Drill Company, Cleveland, Ohio.
W. C. REITZ, Pittsburgh Steel Company, Pittsburgh, Pa.
HENRY C. DISSTON, Henry Disston & Sons, Incorporated, Philadelphia, Pa.
F. HERBERT SMITH, Nicholson File Company, Providence, R. I.
GEORGE M. LANDERS, Landers, Fry & Clark, New Britain, Conn.
FRED. I. JOHNSON, Iver Johnson's Arms & Cycle Works, Fitchburg, Mass.
CHALMERS M. KING, McKinney Mfg. Company, Allegheny, Pa.

Opening Meeting.

The first session of the convention will be held Tuesday, June 17, at which the president's address will be delivered, reports of officers and directors received and attention given to such matters of business as may come up. Announcements will also be made of the entertainment features of the convention, which, it is understood, will contribute much to the pleasure of the occasion.

Discussion of Trade Questions.

On Thursday morning at 10 o'clock the principal meeting of the association will be held, at which the following subjects will be discussed by the gentlemen named:

THE PROBABLE EFFECTS OF MERCANTILE CONSOLIDATIONS, W. M. Pratt, Goodell-Pratt Company, Greenfield, Mass.
THE FUTURE OUTLOOK FOR BUSINESS, Frank Dickerson, American Tin Plate Company, New York City.
CONTRACTS—ARE THEY MUTUALLY BINDING AS NOW INTERPRETED? F. S. Kretsinger, Iowa Farming Tool Company, Fort Madison, Iowa.
SPECIAL BRANDS—WHAT CAN BE DONE TO ERADICATE THEM? C. S. Van Wagoner, the Van Wagoner Company, Cleveland, Ohio.

It is intended that there shall be a general discussion of these questions relating to the obligation of contracts and the eradication of special brands, which should be of very general interest in view of the practical importance of the subjects.

Officers and Committees.

In this connection the names of the officers and of the more important committees, in addition to the representative committee named above, will be of interest.

PRESIDENT.

FAYETTE R. PLUMB, Fayette R. Plumb, Incorporated, Philadelphia, Pa.

VICE-PRESIDENTS.

SAMUEL M. NICHOLSON, Nicholson File Company, Providence, R. I.
C. S. VAN WAGONER, the Van Wagoner Company, Cleveland, Ohio.
F. S. KRETSINGER, Iowa Farming Tool Company, Fort Madison, Iowa.

SECRETARY-TREASURER.

F. D. MITCHELL, room 714, Frick Building, Pittsburgh, Pa.

EXECUTIVE COMMITTEE.

ROBERT GARLAND (chairman), Standard Chain Company, Pittsburgh, Pa.
Henry B. Lupton, Oliver Iron & Steel Company, Pittsburgh, Pa.
N. A. Gladding, E. C. Atkins & Co., Indianapolis, Ind.
W. S. McKinney, McKinney Mfg. Company, Allegheny, Pa.
Samuel Disston, Henry Disston & Sons, Incorporated, Philadelphia, Pa.

Chas. E. Adams, Cleveland Hardware Company, Cleveland, Ohio.

James P. Kelly, Kelly Axe Mfg. Company, Alexandria, Ind.
J. C. Birge, St. Louis Shovel Company, St. Louis, Mo.

MEMBERSHIP COMMITTEE.

WILLIAM H. HAYS (chairman), Iron City Tool Works, Pittsburgh, Pa.
George P. Hart, the Stanley Works, New Britain, Conn.
Gifford V. Lewis, Old Dominion Iron & Nail Works Company, Richmond, Va.
Edward Ingalls, the Atha Tool Company, Newark, N. J.
Tom Almgill, G. & H. Barnett Company, Philadelphia, Pa.
D. W. Simpson, Wilcox Mfg. Company, Aurora, Ill.
Edward Kemp, Wabash Screen Door Company, Chicago, Ill.
E. G. Buckwell, Cleveland Twist Drill Company, Cleveland, Ohio.
P. H. Withington, Withington & Cooley Mfg. Company, Jackson, Mich.

GRIEVANCE COMMITTEE.

OLIVER WILLIAMS (chairman), Bryden Horseshoe Company, Catsauqua, Pa.
Alfred W. Barnett, G. & H. Barnett Company, Philadelphia, Pa.
George W. Corbin, Corbin Cabinet Lock Company, New Britain, Conn.
W. T. Norton, Norton Tool Company, West Park, Ohio.
P. B. Noyes, Oneida Community, Limited, Kenwood, N. Y.

Membership.

The representative character of the American Hardware Manufacturers' Association is indicated in the following list of members, which includes, it will be observed, many prominent concerns. It is anticipated also that there will be at the Atlantic City meeting a further accession to the membership, which will thus become even more representative of the great interests for whose welfare the association is organized.

American Steel & Wire Company, Chicago, Ill.
 American Steel Hoop Company, Pittsburgh, Pa.
 American Tin Plate Company, New York City.
 Alabama Steel & Wire Company, Birmingham, Ala.
 E. C. Atkins & Co., Indianapolis, Ind.
 The Avery Stamping Company, Cleveland, Ohio.
 American Screw Company, Providence, R. I.
 The Atha Tool Company, Newark, N. J.
 American Cutlery Company, Chicago, Ill.
 The Atlas Bolt & Screw Company, Cleveland, Ohio.
 The American Axe & Tool Company, New York City.
 The American Wringer Company, New York City.
 Alabama Tube & Iron Company, Birmingham, Ala.
 The Atlas Glass & Metal Company, Wheeling, W. Va.
 R. Bliss Mfg. Company, Pawtucket, R. I.
 George H. Bishop & Co., Lawrenceburg, Ind.
 G. & H. Barnett Company, Philadelphia, Pa.
 Boston & Lockport Block Company, Boston, Mass.
 Buffalo Scale Company, Buffalo, N. Y.
 Buffalo Bolt Company, Buffalo, N. Y.
 Bryden Horseshoe Company, Catsauqua, Pa.
 The Berger Mfg. Company, Canton, Ohio.
 The Bronson-Walton Company, Cleveland, Ohio.
 The Bridgeport Chain Company, Bridgeport, Conn.
 The Billings & Spencer Company, Hartford, Conn.
 E. & G. Brook Iron Company, Birdsboro, Pa.
 Crucible Steel Company of America, Pittsburgh, Pa.
 Cleveland Twist Drill Company, Cleveland, Ohio.
 Cleveland Stone Company, Cleveland, Ohio.
 Cleveland Block Company, Cleveland, Ohio.
 The Cleveland Hardware Company, Cleveland, Ohio.
 Cleveland Wire Spring Company, Cleveland, Ohio.
 Columbian Hardware Company, Cleveland, Ohio.
 The Cleveland Tack Works, Cleveland, Ohio.
 Chisholm Steel Shovel Works, Cleveland, Ohio.
 The Columbus Chain Company, Columbus, Ohio.
 Chicago Spring Butt Company, Chicago, Ill.
 P. & F. Corbin, New Britain, Conn.
 John Chatillon & Sons, New York City.
 Corbin Cabinet Lock Company, New Britain, Conn.
 Clendenin Brothers, Baltimore, Md.
 Clinton Wire Cloth Company, Clinton, Mass.
 The Clyde Cutlery Company, Clyde, Ohio.
 Cobb & Drew, Plymouth, Mass.
 The Cronk & Carrier Mfg. Company, Elmira, N. Y.
 The Cincinnati Tool Company, Cincinnati, Ohio.
 Henry Disston & Sons, Incorporated, Philadelphia, Pa.
 The Deming Company, Salem, Ohio.
 The Diamond State Steel Company, Wilmington, Del.
 The J. A. DeArmond Mfg. Company, Cincinnati, Ohio.
 Enterprise Mfg. Company, Philadelphia, Pa.
 Evansville Tool Works, Evansville, Ind.
 Eagle Lock Company, New York City.
 The Griffin Mfg. Company, Erie, Pa.
 Grafton Stone Company, Elyria, Ohio.
 Garland Chain Company, Pittsburgh, Pa.
 Goodell Company, Antrim, N. H.
 Goodell-Pratt Company, Greenfield, Mass.
 The Hazard Powder Company, New York City.
 Hussey, Binns & Co., Limited, Pittsburgh, Pa.
 Hero Fruit Jar Company, Philadelphia, Pa.
 The Holley Mfg. Company, Lakeville, Conn.
 Heller Brothers Company, Newark, N. J.

Harrington & Richardson Arms Company, Worcester, Mass.
 Hopkins & Allen Arms Company, Norwich, Conn.
 Hart & Cooley Company, New Britain, Conn.
 Illinois Wire Company, Chicago, Ill.
 Iver Johnson's Arms & Cycle Works, Fitchburg, Mass.
 Iron City Tool Works, Limited, Pittsburgh, Pa.
 The Iowa Farming Tool Company, Ft. Madison, Iowa.
 Jones & Laughlins, Limited, Pittsburgh, Pa.
 The Kirk-Latty Mfg. Company, Cleveland, Ohio.
 Kelly Axe Mfg. Company, Alexandria, Ind.
 The Klein-Logan Company, Pittsburgh, Pa.
 The Keystone Mfg. Company, Buffalo, N. Y.
 The Kilbourne & Jacobs Mfg. Company, Columbus, Ohio.
 The Kelly Nall & Iron Company, Ironton, Ohio.
 Newton Kelsay, Evansville, Ind.
 The Lamson & Sessions Company, Cleveland, Ohio.
 Landers, Frary & Clark, New Britain, Conn.
 Lovell Mfg. Company, Erie, Pa.
 The Lufkin Rule Company, Saginaw, Mich.
 M. Lanz & Sons, Pittsburgh, Pa.
 Mayer & Co., Philadelphia, Pa.
 The Metal Goods Mfg. Company, Cleveland, Ohio.
 McCaffrey File Company, Philadelphia, Pa.
 McKinney Mfg. Company, Allegheny, Pa.
 Mann Edge Tool Company, Lewistown, Pa.
 Charles Morrill, New York City.
 H. H. Mayhew Company, Shelburne Falls, Mass.
 The Fred. J. Meyers Mfg. Company, Hamilton, Ohio.
 The David Maydole Hammer Company, Norwich, N. Y.
 Miller Lock Company, Philadelphia, Pa.
 North Brothers Mfg. Company, Philadelphia, Pa.
 Nicholson File Company, Providence, R. I.
 National Sweeper Company, Marion, Ind.
 Norton Tool Company, Cleveland, Ohio.
 National Sewing Machine Company, Belvidere, Ill.
 National Hardware & Malleable Iron Works, Philadelphia, Pa.
 North Wayne Tool Company, Hallowell, Me.
 Northwestern Malleable Iron Company, Milwaukee, Wis.
 Nixdorf-Krein Mfg. Company, St. Louis, Mo.
 Oliver Iron & Steel Company, Pittsburgh, Pa.
 Old Dominion Iron & Nail Works Company, Richmond, Va.
 Ohio Tool Company, Columbus, Ohio.
 Onelda Community, Limited, Kenwood, N. Y.
 The Peters Cartridge Company, Cincinnati, Ohio.
 Pittsburgh Screw & Bolt Company, Pittsburgh, Pa.
 Fayette R. Plumb, Inc., Philadelphia, Pa.
 Pittsburgh Steel Company, Pittsburgh, Pa.
 The Pike Mfg. Company, Pike Station, N. H.
 The A. J. Phillips Company, Fenton, Mich.
 The Charles Parker Company, Meriden, Conn.
 Romer Axe Company, Dunkirk, N. Y.
 Reynolds Wire Company, Dixon, Ill.
 Rome Mfg. Company, Rome, N. Y.
 Reed & Prince Mfg. Company, Worcester, Mass.
 Standard Chain Company, Pittsburgh, Pa.
 Stanley Rule & Level Company, New Britain, Conn.
 St. Louis Shovel Company, St. Louis, Mo.
 J. Stevens Arms & Tool Company, Chicopee Falls, Mass.
 Standard Horse Nail Company, New Brighton, Pa.
 The Stanley Works, New Britain, Conn.
 O. P. Schriver & Co., Cincinnati, Ohio.
 Stowell Mfg. & Foundry Company, South Milwaukee, Wis.
 The Stengel Mfg. Company, Hamilton, Ohio.
 Sharon Steel Hoop Company, Sharon, Pa.
 Simonds Mfg. Company, Fitchburg, Mass.
 S. R. Slaymaker, Lancaster, Pa.
 E. H. Titchener & Co., Binghamton, N. Y.
 C. C. & E. P. Townsend, New Brighton, Pa.
 Tucker & Dorsey Mfg. Company, Indianapolis, Ind.
 Toledo Metal Wheel Company, Toledo, Ohio.
 Tubular Rivet & Stud Company, Boston, Mass.
 United States Hame Company, Buffalo, N. Y.
 The Upson Nut Company, Cleveland, Ohio.
 The United States Wire & Nail Company, Pittsburgh, Pa.
 Union Steel Company, Pittsburgh, Pa.
 The Van Wagoner Company, Cleveland, Ohio.
 Withington & Cooley Mfg. Company, Jackson, Mich.
 Wabash Screen Door Company, Chicago, Ill.
 Wilcox Mfg. Company, Aurora, Ill.
 J. D. Warren Mfg. Company, Chicago, Ill.
 Warwood Tool Company, Wheeling, W. Va.
 Warren Axe & Tool Company, Warren, Pa.
 Wells Brothers & Co., Greenfield, Mass.

THE strike of employees at Sargent & Co.'s factory, New Haven, Conn., was a sudden affair and soon ended. A committee called on the company's president June 6, and after a quite harmonious discussion the matter in dispute was satisfactorily adjusted. The employees are all back, and matters have resumed their normal condition.

Freiburger Hardware Company are successors to J. J. Freiburger in the wholesale and retail Hardware, Tinware, Furnace and Roofing business in Fort Wayne, Ind. The company have lately added the sale of Fishing Tackle and other Sporting Goods.

A USEFUL POSTAL CARD.

The accompanying cut represents a postal card, reduced, sent out by the Boston & Lockport Block Company of Boston, Mass., with each copy of their 1902 catalogue. The design of the card is to bring the manufacturers and the dealer in closer touch in regard to particular lines. The company remark that there are very few lines of goods where the ordinary buyer is as little

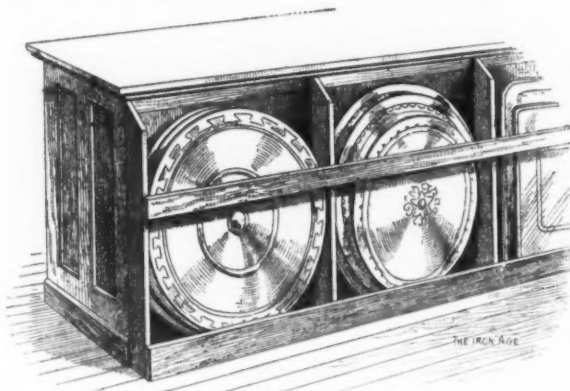
(X) Thanks for 1902 Catalogue.	
Received	
Have examined same.	
Our last catalogue dates	
We purchase in open market with preferences (STAR)	
for	Brand
Or without preferences as to brand.	
Our trade is principally for	
(Wood)	(Metal)
(Ham)	(Wire)
Blocks.	
Rope.	
Are you interested in trucks, diaphragm pumps, mallets, faucets?	
We are most interested in goods listed on pages	
REMARKS:	
Yours truly,	
..... (Name)	
..... (Address)	
1902.	

A Useful Postal Card.

posted in the several details as on blocks, and any method that will aid the buyer in gaining necessary information cannot be otherwise than of mutual help to both manufacturer and dealer. This is the first time the company have sent out postal cards with catalogues, but they have previously tested similar cards to their satisfaction, by inclosing them with certain of their correspondence, and are prepared to recommend the plan as helpful.

KEEPING STOVE BOARDS.

THE method of keeping Stove Boards in use in the store of James Wilson, Stamford, Conn., is clearly shown in the accompanying illustration. As will be seen, Boards $3\frac{1}{2}$ inches wide are fastened at intervals



Keeping Stove Boards.

to the front of a counter. Across these are fastened two strips, one at the base and the other a little more than half way up. The Stove Boards are put in the spaces thus made, where they are out of the way and at the same time of easy access and in plain view of customers.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

T. H. Griffith & Co., Glenville, W. Va., have just opened up in business, and are desirous of receiving catalogues and price-lists relating to General Hardware and Building Supplies.

Fee & Stewart Company, Melbourne, Fla., wholesale and retail Hardware and furniture, have just opened a branch store at Fort Pierce, Fla., and will appreciate duplicate sets of catalogues pertaining to Hardware, Tinware, Rope and Twine, Agricultural Implements, Wooden Ware, Electrical Supplies, House Furnishings, Stoves, Sporting Goods, Paints, and Oils, Glass, &c.

Edwin M. Waller has recently bought the stock of the Atlantic City Hardware store, 2114 and 2116 Atlantic avenue, Atlantic City, N. J., and will be pleased to receive catalogues and quotations from manufacturers.

Patton & Abbott, who have lately embarked in the Hardware business at 220 North Sixteenth street, Omaha, Neb., advise us that they would be pleased to receive catalogues relating especially to Builders' Hardware.

The establishment of W. H. Goodfellow & Son, jobbers and retailers of Hardware, Stoves, Tinware, Agricultural Implements, Harness, &c., Hollidaysburg, Pa., was badly damaged by fire a short time since, their loss being \$9000, with insurance of \$6000. The firm have resumed business, and request copies of the latest catalogues and price-lists.

Frank Gilbert Supply Company, Sharon, Pa., have recently been organized under the laws of Pennsylvania with a capital of \$50,000, to do a General Hardware, Builders' and Mill Supply business, largely in a jobbing way. Frank Gilbert, who has been for the past 12 years connected with the Fruit-Oil Company of Sharon as secretary and treasurer, is president of the company, and P. M. Gonder is secretary and treasurer. The company would appreciate catalogues and quotations from manufacturers in the above lines.

TRADE ITEMS.

WOODHOUSE CHAIN WORKS, Trenton, N. J., whose plant was partially destroyed by fire on April 17 last, are rebuilding. Several improvements are being made in its arrangement, and they expect to resume operations about July 1.

TAPLIN MFG. COMPANY are now in their own factory at New Britain, Conn. It is equipped with new and improved automatic machinery and they are now prepared to turn out goods in larger quantities so as to meet the requirements of their expanding trade, both domestic and export.

GEORGE CALLAHAN & Co., 218 Front street, New York, direct attention to their Steam Joint Cement and their Roof Cement. They refer to these products as in use for the past 15 years by many large manufacturing concerns, as well as by the United States Government.

J. V. Z. ANTHONY, who for many years was in charge of an important department of Hartley & Graham, and later manager of C. B. Barker & Co., 93 Reade street, is one of the proprietors of the New York Process Letter Company, duplicators of typewritten personal letters. During the past year they were at 82 Duane street, but the increase in their business has compelled them to greatly enlarge their facilities. They make a specialty of duplicating in *fac-simile* typewritten letters, used by business concerns in circularizing their customers.

TROY LAUNDRY MACHINERY COMPANY, with factory at Troy, N. Y., who for a long period were at 15 Warren street, but for the last two years at 258 Broadway, have now taken large and spacious quarters on the southeast corner of Warren and Church streets, New York.

This company are large manufacturers of Laundry Machinery and supplies for hotels, institutions, laundries and similar places.

C. E. JENNINGS & Co., 101 Reade street, New York, manufacturers of fine Mechanics' Tools, have factories at several places, one of which is at Yalesville, Conn., where are produced with other goods of analogous character the well-known L'Hommedieu Ship Auger Bits. The business of making the goods of the L'Hommedieu brand was established originally at Deep River, Conn., but was removed to Yalesville many years ago. At this same factory are made various boring implements, such as Auger Bits, Ship Augers, Nut and Ring Augers, Chisels and Drawing Knives, &c. The L'Hommedieu goods are regularly shipped to the Continent of Europe, and to more remote quarters, such as China, Philippines, Australasia, India, Java, South Africa, as well as Russia, Finland and the Scandinavian countries.

THE KELLEY-HOW HARDWARE COMPANY and the Thompson-Glaskin Company of Duluth, Minn., have consolidated under the name of the Kelley-How-Thompson Company, with a capital of \$500,000. The new company will occupy a building, now under construction by the Killorin Construction Company, situated on Fifth avenue, Duluth. The company will distribute both Heavy and Shelf Hardware, including mining, railroad and lumbermen's supplies, and also rubber goods.

BAYONNE KNIFE COMPANY, 57 Warren street, New York, bring out from time to time assorted specialties for the use of the Hardware and allied trades in Cutlery, Silver Ware and similar articles, in addition to their regular product. Among the newest is an easel card, 16 x 11 inches, covered with black paper and holding one dozen assorted Scissors and Shears that can be retailed at 25 cents each, the price being plainly stated in gilt letters. A similar card of the same dimensions, covered with red paper and having gilt lettering, has an assortment of the better grade Scissors and Shears, to be retailed at 50 cents each. The Shears are nicked, each card has an easel back so that it can be displayed on the counter or showcase to sell from, and they are put up in separate pasteboard cartons. Still another easel card of ornamental shape in dark green, with silver gilt letters, the extreme dimensions of which are 14 x 11 inches, contains an assortment of Silver Plated Flat Ware, any of which can be retailed at 25 cents per bundle. This contains four packages, as follows: Six Tea Spoons, three each Table and Dessert Spoons and three Forks.

On the 3d inst. the F. W. Oliver Company, Hardware merchants, Niagara Falls, N. Y., entertained their employees, 41 in number, at dinner at the Prospect House. The occasion was a most successful and enjoyable one.

LISK MFG. COMPANY.

THE LISK MFG. COMPANY, Canandaigua, N. Y., have recently issued a handsomely gotten up illustrated catalogue of what is known as Lisk's Four-Coated Enameled Steel Ware. The various articles, including Pails, Dippers, Basins, Sauce Pans, Kettles, Boilers, Bowls, Pudding and Dish Pans, Pie Plates, Milk Pans, Cups and Ladles, Coffee and Tea Pots, Tea Kettles, Colanders, Cuspidors and Toilet Sets, are shown in *fac-simile* colors on enameled paper, the whole arrangement being tasteful and attractive. Views of the company's extensive factories are also presented.

TOWER & LYON COMPANY.

THE business of this well-known firm was on June 1, 1902, incorporated under the laws of the State of New York as the Tower & Lyon Company, with a capital of \$75,000. The officers are John J. Tower, president; Charles S. Gallagher, vice-president; William H. Cole, treasurer, and Warren M. Tower, secretary. The business of this house was established in 1865, their product being the manufacture of high grade Mechanics' Tools and Hardware Specialties. The New York office of the Union Hardware Company, Torrington, Conn., is also in their charge.

ATLAS TACK COMPANY.

THE completion of the new Tack plant of the Atlas Tack Company, at Fairhaven, Mass., and the removal of the business from Taunton recently, was a memorable event in the company's history, which dates back to 1810, when B. Hobart started the business of making Tacks by machinery in Abington, Mass. An exhaustive *résumé* of the prominent features of this industry was published in a supplementary edition of the *Fairhaven Star*, May 17, in which the origin and growth of the business is given, accompanied by exterior and interior views of the new works.

Henry H. Rogers, the present owner of the business, is also vice-president and director of the Standard Oil Company. He is a native of Fairhaven. George W. Weymouth, president and general manager of the company, was formerly Congressman from Massachusetts, and before that vice-president and manager of the Simonds Rolling Machine Company, Fitchburg, Mass. He is also a director of the Fitchburg National Bank, Fitchburg Savings Bank and several other Fitchburg business enterprises. He is thus fitted by ability and experience for the important position he now occupies.

The new plant is located on a plot of ground covering 15 acres. The factory is a mammoth structure of brick, glass and timber, 673 feet long and 226 feet wide, covering an area of $3\frac{1}{2}$ acres, the building being two and three stories high in different parts. The main office is finished in dark oak, one of the private offices being occupied by the president. The Tack and Nail cutting department occupies a space 250 x 110 feet and contains nearly 500 high speed Tack machines. Among other details of this highly modern plant is a department, 110 x 75 feet, for making Lining Nails, Tufting Buttons, Paper Headed Tacks, Glaziers' Points, &c., together with construction and repair departments, wire department, a room for galvanizing, tinning and electroplating, carpenter shop, bluing room, packing and shipping rooms and other necessary adjuncts of a modern equipment. The power house is an independent building.

One of the features of the dedication of the new Tack mill was a grand ball in the mammoth structure, in which nearly 1000 people participated.

The New York branch of the business is managed by J. F. Hobart, assisted by Sayers Hadley, both of whom have long been associated with the company and their predecessors.

THE PIKE MFG. COMPANY.

THE PIKE MFG. COMPANY, Pike Station, N. H., have recently moved their Oil Stone business from Manlius, N. Y., to Littleton, N. H., at which latter point they have built a more commodious factory which has been equipped with modern, up to date machinery of the highest order. The mill at Manlius, we are advised, was never well adapted to the economical manufacture of Oil Stones, having been constructed for an entirely different purpose, and the machinery was old fashioned and worn out. In equipping their new plant at Littleton the company have spared neither time nor expense in the effort to secure the best machinery yet designed for this class of work, and to install same in such a manner as to enable them to turn out even better finished goods than heretofore at the lowest possible cost. They state that the demand for their general line of Oil Stones has increased very steadily since they took up this department of the sharpening stone business in 1884, the increase having been especially large during the past 20 months and far in excess of their capacity to produce. The present capacity of their new factory at Littleton is nearly 50 per cent. greater than the old mill at Manlius, and this will be still further increased during the next three months by the addition of further machinery. The Littleton factory consists of a building 100 x 80 feet, three stories high, with two large warehouses and two storage sheds. A particular feature of the factory is the new machinery for turning out special Arkansas work, whereby the company can fill orders for special shapes and sizes in a fraction of the time required heretofore.

A DISPLAY STAND.

A DISPLAY STAND, constructed as shown in the accompanying illustration, is in use in the store of James Wilson, Stamford, Conn. It will be noticed that each shelf is a little narrower than the one directly under it, thus permitting the articles on the lower shelves to be seen to good advantage without compelling the



A Display Stand.

customer to lean over. The shelves are finished in cherry stain, and hold a variety of articles to which it is desired to attract attention.

PRICE-LISTS, CIRCULARS, &c.

M. S. BROOKS & SONS, Chester, Conn.: Illustrated catalogue and price-list of Bright Iron and Brass Wire Goods, Spring Cotters, Flat Spring Keys, Mill Wire Goods, &c., also Razor Strop Trimmings.

LUTHER BROTHERS COMPANY, Milwaukee, Wis.: Tool and Sickle Grinders, Drilling Attachments, &c. On their Trojan Grinder the company are using Carborundum wheels. This substance is referred to as being the hardest known with the exception of the diamond.

THE A. J. PHILLIPS COMPANY, Fenton, Mich.: Wire Screens and specialties. A catalogue relating to Screens made to order includes illustrations of these goods. This is a desirable line for retailers to take up, it is remarked, as they are obliged to carry no stock except samples, which are furnished free of cost. The company's business in this line is increasing rapidly, we are informed.

THE DAVIS-HANSEN COMPANY, Oshkosh, Wis.: Iron Pumps, Cylinders, &c. The company also job Pipe, Fittings, Tools, Well Supplies, &c. Among goods recently added to their line of manufactures are Brass Body Pitcher Spout Pumps, Pipe Holders and Lifters, Brass Body House Force Pumps, and Long Fulcrum Lift and Force Pumps.

THE PENN SHOVEL COMPANY, Corry, Pa.: Shovels, Scoops and Spades. An illustrated catalogue and price-list shows a line of Hollow Back Goods. The company advise us that they soon expect to have a line of Solid Back Shovels on the market.

THE FOOTE-KLINE FOUNDRY COMPANY, Fredericktown, Ohio: The Perfection Third Folding Buggy Seat. An illustrated circular describes the Seat.

THE HANDY THING COMPANY, Ludington, Mich.: Among the Handy Things shown in their 1902 catalogue are Vegetable Slicers, Bread and Bacon Slicers, Window, Floor and Counter Cleaners, Can Openers, Cake and Meat Turners, Mouse Traps, Bicycle Brakes, &c.

UNION FENCE COMPANY, De Kalb, Ill.: Farm, Lawn and Poultry Fences. These are illustrated in a descriptive price-list.

CALDWELL MFG. COMPANY, Rochester, N. Y.: Car Window Sash Balances. An attractive pamphlet illustrates and describes this line of Balances.

THE WESTERN WHEELED SCRAPER COMPANY, Aurora, Ill.: Elevating Grader, and Dump Wagon for grading and excavating work. A pamphlet contains testimonial letters from a number of their customers.

UNITED ELECTRIC HEATING COMPANY, Detroit, Mich.: Postal circular relating to Electric Heating Apparatus, Sad Irons, Cooking Utensils, &c.

THE ELECTRIC & CHEMICAL MFG. COMPANY, 878 Broadway, N. Y.: E. & C. Monarch Electric Gas Lighters. These goods are shown in an illustrated catalogue and price-list.

WILCOX, CRITTENDEN & Co., Middletown, Conn.: Supplement to 1901 catalogue. This relates to Marine Hardware, including novelties in Launch Fittings, for which there has been an increasing demand during the past two years.

THE CLYDE CUTLERY COMPANY, successors to Hunter Tool Company, Clyde, Ohio: Folder showing a few patterns of Knives made and guaranteed by them. It illustrates Butcher Knives, Sticking Knives, Skinning Knives, Bread Knife, Royal Slicer, Kitchen Knives, &c.

BONNEY VISE & TOOL WORKS, 3015 Chestnut street, Philadelphia: Catalogue of Amateurs' and Machinists' Vises, Mechanics' Tools and Hardware Specialties. They state that they have been obliged to add new and special machinery in order to meet their increasing business, and call particular attention to the finish, style and workmanship of their Champion Vises.

TUCKER & DORSEY MFG. COMPANY, Indianapolis, Ind., manufacturers of Hardware and Wooden Ware Specialties, for whom John H. Graham & Co., 113 Chambers street, New York, are selling agents, issue an illustrated catalogue of their products. An important and diversified line is a series of Alarm Tills, or Money Drawers, of which several have new features. Other goods are Wood Saw Frames and Bucks, Stove, Barrel and Box Trucks, Vegetable, Slaw and Kraut Cutters, Towel Rollers, Hat and Clothes Racks, Towel Racks, Knife and Fork Trays, Lemon Squeezers, Mop Wringers, Step Ladder and Chair and patent Casters, all of which are in large assortments.

PARRY MFG. COMPANY, Indianapolis, Ind.: Parry Buggies. An illustrated folder describes the Henley Buggy No. 118.

THE MARKHAM AIR RIFLE COMPANY, Plymouth, Mich., show a variety of styles of Air Rifles in a recently issued pamphlet.

THE NOVELTY MFG. COMPANY, Rock Island, Ill.: Stock Fountain, Wind Mill Regulator, Sickle and Tool Grinder, Hay Windrower, &c. These are shown in the company's catalogue.

ROBINSON & Co., Richmond, Ind.: Catalogue illustrating Engines, Threshers, Saw Mill Machinery, &c.

A. C. WILLIAMS, Ravenna, Ohio: Hardware, House Furnishing Specialties, Toys, &c. An illustrated catalogue and price-list is devoted to these goods, including Sad Irons, Riveting Machines, Raisin Seeders, Ice Shaves, Ice Picks and Chisels, Lemon Squeezers, &c.

THE UPSON NUT COMPANY, Unionville, Conn., and Cleveland, Ohio: Nuts, Washers, Bolts, Coach and Lag Screws, Box Wood and Ivory Rules, Felloe Plates, Clip Yokes, Shaft Couplings, Clips, Rivets, &c. These are illustrated in the company's price-list.

THE HARTFORD RUBBER WORKS, Hartford, Conn.: Tires for Bicycles, Automobiles, Motor Cycles and Carriages, Mats, Matting, Packing, Springs, Rubber Mechanical Goods, &c. Separate catalogues illustrate the different lines of goods.

ATHOL MACHINE COMPANY, Athol, Mass.: Illustrated catalogue and price-list of Mechanics' Fine Tools, Vises, Iron Levels, Vise Pipe Grips, Rapid Transit Wrenches, &c.

PHENIX CASTER COMPANY, Indianapolis, Ind., for whom John H. Graham & Co., 113 Chambers street, New York, are selling agents: A finely illustrated descriptive catalogue of their Antifriction Casters, which are made in great variety for numerous and diversified uses. New goods are illustrated on pages 24, 25, 28, 29, 33 and 40 for heavy trucks, tables, boxes, &c. On the inside of the back cover is a schedule of freight rates to 173 of the larger cities of the United States and Canada from their factory in Hamilton, Ohio.

THE CHALLENGE REFRIGERATOR COMPANY, Grand Rapids, Mich. The company issue catalogues showing their lines of Victor, Triumph, Iceberg and Grand Refrigerators. The company advise us that they anticipate adding materially to their factory facilities the coming season, and that they will probably put in a line of White Enameled and Glass Lined Refrigerators.

W. C. HELLER & Co., Montclair, N. J.: Steel Hardware Shelf Boxes. A unique and well printed catalogue gives illustrations of the firm's Shelf Box and its construction, also interior views of a number of stores that have been fitted with the Boxes. In addition there are shown Sample Holders, Drawer Pulls and Card Clips, and Dust Proof Cases or Cabinets, the latter being adapted to Screws, Bolts, Cabinet Hardware and a variety of other goods.

MAINE MFG. COMPANY, Nashua, N. H.: White Mountain Refrigerators. The company issue an attractive folder in which the merits of their goods are set forth. They also manufacture the Maine Refrigerators.

THE AMERICAN CRAYON COMPANY, Sandusky, Ohio, and Waltham, Mass.: Price-lists of Wax and Oil Crayons and Chalk Crayons, both white and colored, Hard Dustless Crayon, &c.

MISCELLANEOUS NOTES.

The Logan Stove Pipe Thimble.

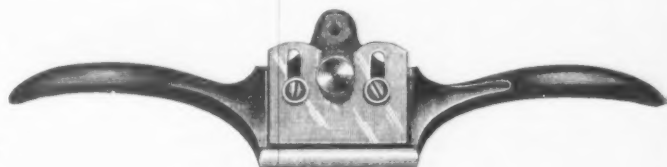
The Logan Mfg. Company, Ottumwa, Iowa, are offering a stove pipe thimble, which is double a part of its length. The outer shell tapers, while the inner or shorter shell is of the same diameter throughout. The two shells are fastened together at the smallest end of the thimble, thus leaving an opening between the shells for the stove pipe to enter. Among the advantages claimed by the manufacturers are the following: That the pipe needs no wiring, that the pipe cannot be pushed too far in the flue, that it prevents smoking the wall or wall paper, that soot cannot blow into the room, that the pipe will not come out of the flue, that creosote or water cannot run down the wall, that there is no trouble from the draft passing into the chimney around the outside of the smoke pipe, and that a perfect draft through the stove is thus assured.

Machinists' and Pipe Fitters' Tool Chests.

The American Tool Chest Company, 200 West Houston street, New York, have just put on the market a new line of machinists' and pipe fitters' tool chests. These chests are made in a number of styles and sizes. In addition to their regular lines of carpenters' chests, both with and without tools, they are making chests for jewelers and house framers' or carpenters' shoulder chests, two of the latter being 25 and 32 inches long, respectively, both 8 x 8 inches on the ends, the various dimensions being on the inside.

Wood's Adjustable Spoke Shave No. F 1.

The A. A. Wood & Sons Company, Atlanta, Ga., are introducing the adjustable iron spoke shave, shown herewith. It is explained that the knife has an iron



Adjustable Iron Spoke Shave No. F 1.

backing, by which it is held firmly to its work, and that all chattering of the bit is done away with. The adjustment is by means of a thumb screw, by which any desired set is obtained. The bits are referred to as being made from superior quality steel and warranted perfect, while the screws are hardened.

The Ohio Coffee Mill.

The Sun Mfg. Company, Greenfield, Ohio, have added to their line the coffee mill herewith illustrated. It has a decorated tin hopper holding 1 pound, and a tin cup. The castings are made in two pieces, combining, it is remarked, simplicity, strength and lightness. The burrs are referred to as being constructed on an entirely new principle, in that they do not come in contact with each

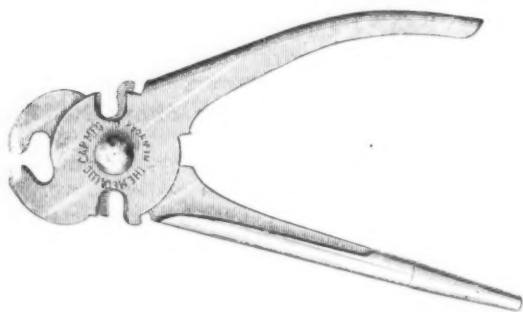


The Ohio Coffee Mill.

other, but are adjusted to each other with a flat surface and operate like a pair of shears, shearing the coffee in a clear, clean cut. The coffee is fed in uniform quantity into the burrs, is sheared in fine lumps, drops to the bottom of the V in the burrs and into the cup. It is stated that the coffee is not crushed and rubbed, and that the burrs constantly clear themselves. It is pointed out that the draft is reduced 50 per cent. by the burrs not touching each other, and that the uniformity of the feed insures a uniform draft.

The Gold Medal Combined Cap Crimper and Fuse Cutter.

The accompanying cut represents a cap crimper and fuse cutter combined, offered by the Metallic Cap Mfg. Company, 271 Broadway, New York. The tool is made



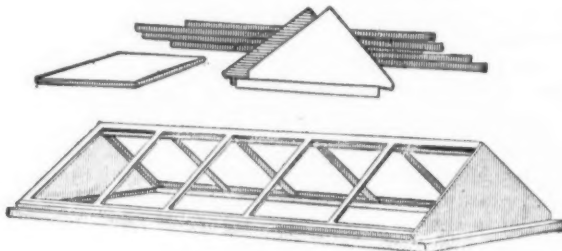
The Gold Medal Combined Cap Crimper and Fuse Cutter.

of stamped steel, nickel plated, and is designed to fasten a cap on fuse firmly and absolutely water tight. It is stated that caps crimped with the tool will always fire, thus avoiding the digging out of wet or unexploded holes.

E. D. Patton and E. V. Abbott, under the style of Patton & Abbott, have opened a new Hardware store at 220 North Sixteenth street, Omaha, Neb., carrying a complete line of Builders' Hardware, Tinware and Stoves. The new firm will discount all bills.

New Galesburg Metal Skylight.

The Galesburg Cornice Works, Galesburg, Ill., are making the new metal skylight of which illustrations showing the fitting in parts and set up are presented herewith. It is pointed out that this skylight can be shipped "knocked down," with a bundle of bars and a box of glass, and that it can be handily transported in this condition to the required position on a roof all ready to be set up on the curb without any tools but a hammer. No cutting or soldering and no putty are needed, everything being made to fit into place on the



New Galesburg Metal Skylight.

curb. It is claimed that one of these skylights can be put on a curb on a roof, ready for the glass, in ten minutes, and in ten minutes more can be completed with glass in position. These skylights are made complete, with glass, in six sizes—namely, 3 x 4, 3 x 6, 4 x 6, 4 x 8, 5 x 10 and 6 x 8 feet. Where required, they can also be made with louver ventilators in the ends. The company make all styles of metal skylights.

S. & P. Pinking Machine.

Neal & Brinker, 18 Warren street, New York, are offering the S. & P. Pinking machine, here illustrated. In dimensions it is 6 inches high from top of casing to un-

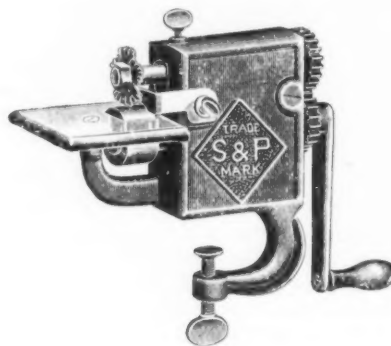


Fig. 1.—S. & P. Pinking Machine.

der portion of curved clamp, the crank is $4\frac{1}{4}$ inches long, and the nicked plate over which the work passes $3\frac{1}{2}$ x $3\frac{1}{2}$ inches. The gears are machine cut, and the cutters and rolls are made of fine tool steel. The case, crank and similar parts are japan finished. Three cutters, as

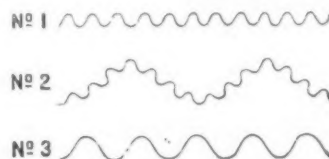


Fig. 2.—Designs of Revolving Pinking Cutters.

here illustrated, are furnished regularly with each machine. This implement is said by the makers to cut the finest silk or coarsest cloth perfectly, the cutting power being regulated by the top thumb screw, which forces the revolving cutter against the roll beneath. Some of the advantages of this article to which the manufacturers call attention are simplicity, economy and durability.

New Combination Pipe and Monkey Wrench and Pipe Cutter.

The Bonney Vise & Tool Works, Incorporated, Philadelphia, Pa., are placing on the market a new combination pipe and monkey wrench and pipe cutter, as shown in the accompanying illustrations. It is provided with a toggle jaw to make a sure grip and secure in-

stant release. By withdrawing the pin and reversing the toggle jaw the tool is in shape for use as a pipe cutter, which reversal can be made in a few seconds. By throwing the toggle up at right angles with the wrench, as shown in Fig. 2, the pipe can be lifted out of the V without running the jaw back, which is referred to as a great saving of time. This feature is also applicable to the use on different sizes of pipe, whereby 1 or 2 inch pipe can be handled with little change in the

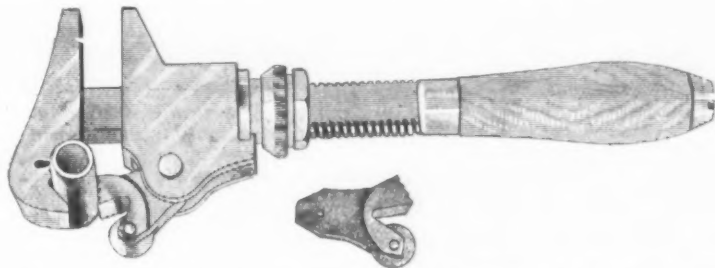


Fig. 1.—New Combination Pipe and Monkey Wrench and Pipe Cutter.

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a handle $3\frac{3}{4}$ inches long. The knife is made in both round and sharp points, and with full German silver trimmings or brass trimmings. Both yacht and canoe knives are furnished regularly with sheaths.

The East Hampton Auto Bell.

The accompanying cut represents a bell manufactured by the East Hampton Bell Company, East Hampton,

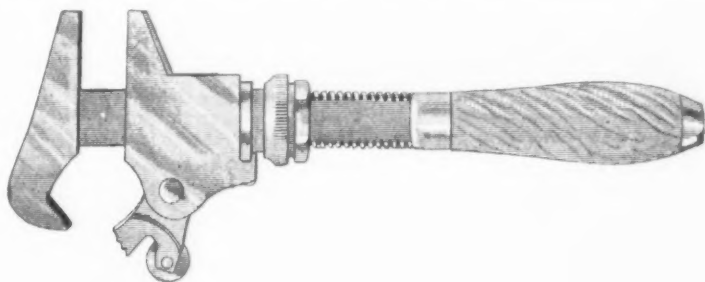


Fig. 2.—The Toggle at Right Angles with the Wrench.

position of the jaws. The tool is furnished in black or bright finish, with long or short nut, and in sizes that will take pipe from $\frac{1}{4}$ to 3 inches in diameter. The head and bar of the wrench are alluded to as a one-piece forging, made from the best material, and all parts are interchangeable. The company claim that the wrench not only combines the superior qualities of a gas pipe wrench, but also the requisite combinations of a regular nut wrench and pipe cutter.

Yacht and Canoe Knives.

The Marble Safety Axe Company, Gladstone, Mich., have added to their line of knives for sportsmen



Fig. 1.—Yacht Knife.

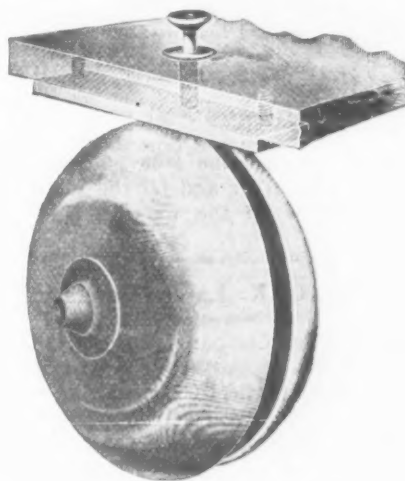
those shown in the accompanying cuts. The knife illustrated in Fig. 1 has been brought out in response to a



Fig. 2.—Canoe Knife.

demand for a yacht knife of the same quality and on similar lines to the company's Ideal hunting knife, but with thinner and lighter blade. The knife shown in Fig.

Conn., and designed for automobiles and wagons. It is furnished finished rough, polished or nickel plated, and with single, double or electric stroke. The manufac-



The East Hampton Auto Bell.

turers remark that in the construction of the bells durability has been made a special mechanical feature, and call attention to the tone as pure, clear and musical.

C. P. Hall, dealer in Hardware, Stoves, Tinware, Sporting Goods, House Furnishing Goods, Furniture, &c., has discontinued his Morrilltown, Ark., store. He continues the store at Russellville, and about September 1 expects to open another and larger establishment in Ardmore, Ind. Ter.

Galvanized Steel Chain Pump Tubing and Steel Curbs.

The accompanying cuts relate to galvanized steel chain pump tubing and steel curbs offered by the St. Joseph Pump & Mfg. Company, St. Joseph, Mo. The tubing shown in Fig. 1 has an inside diameter of 1½ inches, and is made in lengths of 6, 8 and 10 feet. It

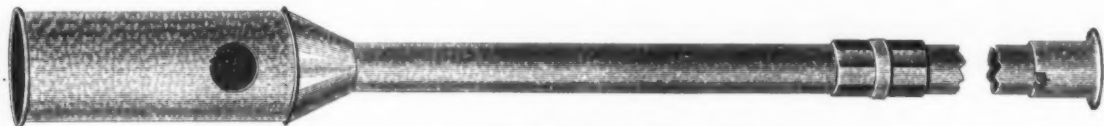


Fig. 1.—Galvanized Steel Chain Pump Tubing.

is referred to as being true and accurate, with malleable screw couplings, while the reservoir has malleable iron ears for protection, through which a wrought iron stirrup protrudes to assure the secure fastening of the tubing to the pump. The ears are riveted on to the reservoir, after which the pipe is galvanized. The box of the curb shown in Fig. 2 is made of No. 22 galvanized steel, painted two coats, stenciled and varnished. It is provided with malleable iron rims on the top and bottom. The manufacturers remark that, unlike wood tubing, which becomes slimy, filled with bacteria, smelling badly and often tainting the water, galvanized steel tubing remains clean and wholesome. Rubber buckets are preferred for use in this tubing, and it is pointed out that the buckets will last longer than in

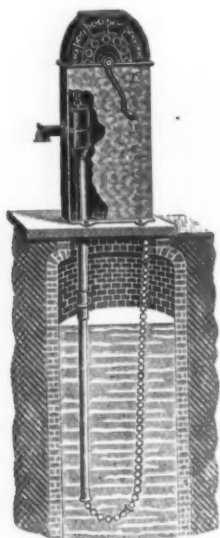


Fig. 2.—Steel Pump Curb.

wooden tubing, because the hole is perfectly smooth and does not wear larger and let the water run back. The large reservoir at the top prevents the water wasting.

The O. K. Lawn Mower.

The Leavitt Mfg. Company, Tuscola, Ill., offer the lawn mower shown in the accompanying illustrations. In Fig. 2 the pitman wheel is shown under the center, attached at the bottom end of the shaft with a small beveled gear on the same shaft. Above the small gear is a bearing in brace to make it doubly secure and to prevent binding. The flat pitman wheel, on the bottom of the shaft, has a turned pin in it, which works in a slot in the sway bar, and as the flat wheel turns the pin carries the sway bar, giving it motion. The sway bar fits over a stud on the under side of the sickle in such a way, it is pointed out, that it positively cannot get off the stud nor be dislocated. The rod or shafting boxes are made in an eccentric form, so that if the machinery wears a little they can be moved to make a perfect fit at all times. The mower has 12-inch drive wheels, and, it is remarked, has plenty of weight to do the work; also the power is so great and the center gearing so

complete that the motion of the sickle is rapid enough to carry the sickle clear, and to easily cut over 3 inches of space while the wheel revolves once, traveling 37 inches. This is explained by stating that the sickle sections only have to cut ⅝ inch at each motion, while the rest of the sharp section is going over what is already cut. The point is made that in this way everything is cut clean and smooth. By a device of the manufacturers the sickle is held down into the guards with

grooves on the inside edges of the sickle bar, which hold it to its place. The back part of the sickle sections are even with the back part of the cutting gear, so that there is no place for grass to clog. The sickle glides in the grooves easily and smoothly, it is stated, and the sickle cannot raise, thus avoiding the use of anything on



Fig. 1.—The O. K. Lawn Mower.

the top of the sickle against which grass would clog and break it off. The sickle is sharpened in the same manner as any field mower sickle. The mower is made in 18-inch size only, and is referred to as cutting all heights of grass as close to the ground as desired, no more power being required to cut tall than short grass. The wheels pass over the grass where it has been cut, so as not to tangle the standing grass.



Fig. 2.—Working Parts of O. K. Mower Uncovered.

The roller from one side plate to the other, as it rolls, is alluded to as pulling the cut grass under it, so that the grass is not in the way of the sickle. The point is made that when moving the mower backward it is noiseless, and that the grass can be cut close to a fence, sidewalk or anywhere. The manufacturers state that the mower is made of the best malleable iron and steel, and that every machine is guaranteed.

Cartridges—**Blank Cartridges:**

32 C. F., \$5.50.....	10¢55
38 C. F., \$7.00.....	10¢55
21 cal. Rim., \$1.50.....	10¢55
32 cal. Rim., \$2.75.....	10¢55
B. B. Caps, Con. Ball Sngl.....	\$1.90
B. B. Caps, Round Ball.....	\$1.40
Central Fire.....	25¢
Target and Sporting Rifle.....	1¢50
Printed Shells and Bullets.....	15¢100
Rim Fire Sporting.....	50¢
Rim Fire, Military.....	15¢50

Casters—

Bed.....	70¢100 to 70¢100
Plate.....	75¢100 to 75¢100
Philadelphia.....	75¢100 to 75¢100
Boss.....	70¢100
Boss Anti-Friction.....	70¢100
Martin's Patent (Phoenix).....	45¢
Payson's Anti-Friction.....	70¢100
Standard Ball Bearing.....	45¢
Tucker's Patent, low list.....	30¢

Cattle Leaders—**See Leaders, Cattle.****Chain, Coil**

American Coil, Jobbers' Shipments:	
3 16 4 6-7 16 9-16	
8 70 6 35 5 30 4 50 4 40 4 20 4 25	
4 11 4 15 4 15 110 134 inch.	
4 11 4 15 4 15 4 15 per 100 lb.	
Less than Cash lots add 25¢.	

German Coil..... 60¢100 to 60¢100

Halters and Ties—

Halter Chains..... 60¢100 to 60¢100

German Halter Chain, list July 25..... 50¢

Cow Ties..... 10¢60 to 10¢60

Trace Wagon, &c.—

Traces, Western Standard: 100 pair

6½-6-3, Straight, with ring..... \$30.00

6½-6-2, Straight, with ring..... \$1.00

6½-6-2, Straight, with ring..... \$35.00

6½-6-2, Straight, with ring..... \$35.00

Twist Traces 2¢ per pair higher than

Straight Link

Trace, Wagon and Fancy Chains..... 50¢100 to 50¢100

Miscellaneous—

Jack Chain, list July 10, '93:

Iron..... 60¢100 to 60¢100

Brass..... 60¢100 to 60¢100

Safety Chain..... 70¢50 to 70¢50

Gal. Pump Chain..... 10¢4 to 10¢4

Covert Mfg. Co.:..... 35¢25

Breast..... 35¢25

Halter..... 35¢25

Rein..... 35¢25

Stallion..... 35¢25

Covert Sad. Works:

Halter..... 70¢

Hold Back..... 70¢

Rein..... 70¢

One da Community:

Am. J. H. and Halters..... 40¢15 to 40¢15

Am. Cow Ties..... 45¢30

Eureka Coil and Halter..... 45¢50 to 45¢50

Niagara Coil and Halter..... 45¢50 to 45¢50

Wire Dog Chains..... 45¢50 to 45¢50

Wire Goods Co.:..... 70¢100

Dog Chain..... 70¢100

Universal Dbl-Jointed Chain..... 50¢

Chalk (From Jobbers.)

Carpenters' Blue..... gro. 42¢45¢

Carpenters', Red..... gro. 37¢40¢

Carpenters', White..... gro. 33¢35¢

See also Crayons.

Chalk Lines—See Lines.**Checks, Door—**

Bardsley's..... 40¢100

Columbia..... 50¢100

Eclipse..... 60¢

Chests, Tool—

American Tool Chest Co.:

Boys' Chests, with Tools..... 55¢

Youths' Chests, with Tools..... 40¢

Gentlemen's Chests, with Tools..... 30¢

Farmers', Carpenters', etc., Chests, with Tools..... 20¢

Machinists' and Pipe Fitters' Chests, Empty..... 50¢

C. E. Jennings & Co.'s Machinists' Tool Chests..... 33¢35¢

Chisels—

Socket Framing and Firmer

Standard List..... 70¢70 to 70¢70

Buck Bros..... 30¢

Charles Buck..... 30¢

C. E. Jennings & Co. Socket Firmer

No. 10..... 60¢100

C. E. Jennings & Co. Socket Framing

No. 15..... 60¢100

Swan's..... 70¢100

L. & J. White..... 30¢30 to 30¢30

Tanged—

Tanged Firmers..... 40¢50 to 40¢50

Buck Bros..... 30¢

Charles Buck..... 30¢

C. E. Jennings & Co. Nos. 19, 18, 17..... 16¢100

L. & J. White, Tanged..... 25¢50

Cold Chisels, good quality, lb. 13¢15¢

Cold Chisels, fair quality, lb. 11¢12¢

Cold Chisels, ordinary..... lb. 8¢9¢

Cirrus—

Bench Pat., each \$3.00..... 20¢

Massey's Planer and Milling..... 15¢20¢

Pratt's Positive Drive..... 20¢

Empire..... 20¢

Blacksmith's..... 20¢

Skinner Patent Chucks..... 20¢

Combination Lathe Chucks..... 40¢

Drill Chucks, Patent and Standard..... 20¢

Drill Chucks, New Model..... 20¢

Independent Lathe Chucks..... 20¢

Improved Planer Chucks..... 20¢

Universal Lathe Chucks..... 40¢

Face Plate Jaws..... 40¢

Standard Tool..... 40¢

Improved Drill Chuck..... 45¢

Talon Mfg. Co.:..... 40¢

Combination..... 40¢

Gear Drill..... 30¢

Gear Sprocket..... 30¢

Independent..... 40¢

Union Drill..... 30¢

Universal..... 40¢

Face Plate Jaws..... 35¢

Clamps—

Adjustable Hammer's..... 20¢20 to 20¢20

Cabinet Sargent's..... 50¢100

Carriage Makers' P. S. & W. Co..... 30¢

Carriage Makers' Sargent's..... 60¢

Besy's Parallel..... 3 3/4 to 10 1/4

Lineman's, Uca Drop Forge & Tool

Co. Clamps, see Side Walk

Star Socket, All Steel..... 50¢90 net

Star Shank, All Steel..... 33¢75 net

W. & J. Shank, All Steel..... 33¢75 net

F. S. & W..... 33¢75 net

L. & J. White..... 50¢50 to 50¢50

Clippers—

Chicago Flexible Shaft Company

Hurdy Tole..... 70¢90

Masco Tole..... 70¢90

Monit' Tole..... 70¢90

Stewart's Patent..... 70¢90

Clips, Axle—

Eagle and Superior 4 and 5-16

inch..... 70¢100

Norway, 1/2 and 5-16 inch..... 70¢100

Cloth and Netting, Wire

—See Wire, &c.

Cocks, Brass—

Hardware list:

Compression and Plain Bibbs..... 65¢65 to 65¢65

Globe, Kerosene, Racking, &c..... 65¢65 to 65¢65

Coffee Mills—See Mills, Coffee.

Collars Dog—

Brass, Pope & Stevens' list..... 40¢

Embossed, Gilt, Pope & Stevens' list..... 30¢100

Leather Pope & Stevens' list..... 40¢

Combs, Mane and Tail—

Covert's Saddlery Works..... 60¢100

Compasses Dividers, &c.

Ordinary Goods..... 75¢75 to 75¢75

Bemis & Cail Hd. & Tool Co.:

Dividers..... 65¢

Callipers, Call's Patent Inside..... 65¢

Callipers, Double..... 65¢

Callipers, Inside or Outside..... 65¢

Callipers, Wing..... 65¢

Compasses..... 65¢

J. Stevens A. & T. Co..... 25¢100

Compressors, Corn Shock—

J. B. Hughes' per doz..... \$2.50

Conductor Pipe, Galva.—

L. C. L. to Dealers:

Territory..... Not needed. Not 1

Eastern..... 70¢50 to 70¢50

Central..... 70¢50 to 70¢50

Southern..... 65¢100 to 65¢100

S. Western..... 60¢125 to 60¢125

Terms 2% for cash.

Jobbers receive extra 12¢25¢ on car-

loads loose, and extra 12¢ on car-

loads crated.

See also Eave Troughs.

Coolers Water—

Gal. each..... 4 6 8

Labrador \$1.20 \$1.50 \$1.80 \$2.10 2.20

Gal..... 4 6 8

Iceland, ea. \$1.80 \$2.10 \$2.40 \$3.00

Gal..... 4 6 8

Gal. Lined Ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.00

Gal..... 4 6 8

Gal. Lined Ea. handles

Each..... \$1.95 \$2.15 \$2.40 \$3.30 \$4.15 25¢

Coopers' Tools—

See Tools, Coopers.

Cord—

Sash—

Braided, Drab..... lb. 25¢

Braided, White, Com..... lb. 17 1/2 to 18¢

Cable Laid Italian..... lb. 4, 15¢; B, 16¢

Common India..... lb. 9 to 9 1/2¢

Cotton Sash Cord, Twisted..... 12¢100

Patent Russia..... lb. 1 1/2 to 1 3/4¢

Cable Laid Russia..... lb. 1 1/2 to 1 3/4¢

India Hemp, Braided..... lb. 14¢15¢

India Hemp, Twisted..... lb. 10¢12¢

Patent India, Twisted..... lb. 10¢12¢

Pearl Braided, cotton..... lb. 18¢

Massachusetts, White..... lb. 22¢

Massachusetts, Drab..... lb. 26¢

Eddystone Braided Cotton..... lb. 19¢

Harmony Cable Laid Italian..... lb. 18¢

O-sawan Mills:

Crown, Solid Braided White..... lb. 22¢

Braided, Giant, White..... lb. 20¢

Cable Laid Italian..... 16¢

Cable Laid Russian..... 16¢

Cable Laid India..... 16¢

Braided India..... 18¢

Phoenix, White..... 19¢

Samson, Nos. 7 to 12:

Braided, Drab Cotton..... lb. 32¢

Braided, Indian Hemp..... lb. 32¢

Braided, Linen..... lb. 49¢

Braided, White Cotton, Spot..... lb. 28¢

Silver Lake:

A quality, Drab, 40¢..... 15¢

A quality, White, 35¢..... 15¢

B quality, White, 30¢..... 15¢

Italian Hemp, 40¢..... 15¢

Linen, 57¢..... 15¢

Wire, Picture—

List Oct. '09, \$5 to \$10 to \$55 to \$100 to \$100

Note: There is a good deal of confusion

in lists, some using old list and others the

above list.

Corn Knives and Cutters

—See Knives, Corn.

Corn Planters—

See Planters, Corn.

Crackers, Nut—

Little Giant..... gr. \$24.00

Cradles—

Grain..... 50¢

Crayons—

White Round Crayons, gross..... 5¢6¢

Cases, 100 gross, \$4.50, at factory.

D. M. Stewart Mfg. Co.

Metal Workers' Crayons, gr. \$2.50

Soapstone Pencils, round, flat

or square..... gr. \$1.50

Rolling Mill Crayons..... gr. \$2.50

Railroad Crayons (compo-

sition) gr. \$3.00

See also Chalk.

Creamery Pails—See Pails,**Creamery.****Crooks, Shepherds'—**

Fort Madison, Heavy..... per doz. \$7.00

Fort Madison, Light..... per doz. \$6.50

Crow Bars—See Bars, Crow.**Cultivators—**

Victor Garden..... per doz. \$10.00

Cutlery Table—

Inter-rail and Silver Company:

No. 12 medium Knives, 1875..... per doz. \$3.50

Star, Eagle, Rogers & Hamilton and

Anchor..... per doz. \$3.00

Wm. Rogers & Son..... per doz. \$2.50

Simeon L. & Geo. H. Rogers Company:

12 dwt. Medium Knives..... per doz. \$5.00

No. 75 Medium Knives..... per doz. \$2.50

Cutters—Glass—

H. H. Mayhew Co..... 40¢

Smith & Hemenway Co..... 50¢

Meat—

Hale's, Nos. 11 & 11 1/2 & 11 1/2 13 & 11 1/2

Per doz..... \$9.50 12.50 16.00

American..... 30¢

Nos..... 1 2 3 4 5 6 7 8 9 10 11 12

Each..... \$5 \$7 \$10 \$25 \$50 \$80

No..... 20 40 60 8 10 12

Each..... \$1.75 2.00 2.25 3.00 3.00 4.00

Enterprise..... 25¢25 to 25¢25

Nos..... 5 10 12 22 32

Gates, Molasses and Oil—

Stebbins.....80¢ 50¢ 10¢

Gauges—

Marking, Mortise, etc.....55¢ 10¢ 55¢ 10¢ 10¢

Chapin-Stephens Co., Gauge.....50¢ 10¢ 50¢ 10¢ 10¢

Fulton's Butt Gauge.....30¢ 10¢

Stanley K. & L. Co.'s Butt & Babbit Gauge.....20¢ 20¢ 10¢ 10¢ 10¢

Wire, Brown & Sharpe's.....35¢

Wire, Morse's.....35¢

Wire P. S. & W. Co.....30¢ 10¢

Cinlets—Single Cut—

Nail, Metal, Assorted, gro.....\$1.40 @ 1.80

Spike, Metal, Assorted, gro.....\$2.80 @ 3.25

Nail, Wood Handled, Assorted, gro.....\$1.75 @ 2.00

Spike, Wood Handled, Assorted, gro.....\$3.25 @ 3.50

Class, American Window

Jobbers' List, Jan. 21, 1901.

From store, single and double.....89¢

F. O. B. factory, carload lots:

Single and double strength.....50¢ 55¢

Glasses Level—

Chapin-Stephens Co.....60¢ 60¢ 10¢ 10¢

Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush.....37½¢ 50¢

List B, Cans (½ pts., pts., qts).....33½¢ 18¢

List C, Cans (½ gal., gal.).....25¢ 15¢

International Glue Co. (Martin's).....40¢ 10¢ 50¢

Glue Pots—See Pots, Glue.

Grease, Axle—

Common Grade.....\$5.00 @ 6.00

Dixon's Everlasting.....10¢ 10¢ 10¢ 10¢ 10¢

Dixon's Everlasting, in bxs.....\$1.20 @ 2.00

Snow Flake:

1 qt. cans, per doz.....\$2.00; 2 qt., \$3.20;

1 gal. cans per doz.....\$6.00; 2 gal., \$16.00; 5 gal., \$24.00

Grindstones—

Bicycle Emery Grinder.....\$0.50

Bicycle Grindstones, each.....\$2.50 @ 3.00

Pike Mfg. Co.:

Improved Family Grindstones,

per inch, per doz.....\$2.00 (33½¢)

Pike Mower Knife and Tool

Grinder, each.....\$0.00

Velo Ball Bearing, mounted, Angle

Iron Frames.....each, \$3.25

Guards—Snow—

Cleveland Wire Spring Co.:

Galv. Steel 1000.....\$9.00

Copper 1000.....\$18.00

Cun Powder—See Powder.**Hack Saws—See Saws.****Hafts Awi—**

Peg Patent, Leather Top.....\$1.00 @ 1.25

Peg Patent, Plain Top.....\$3.50 @ 3.75

Sewing, Brass Ferrule.....\$1.50 @ 1.60

Saddlers', Brass Ferrule.....\$1.25 @ 1.45

Peg, Common.....\$1.25 @ 1.35

Brad, Common.....\$1.50 @ 1.75

Halters and Ties—

Cover Mfg. Co.:

Web.....45¢ 25¢

Jute Rope.....45¢ 25¢

Sisal Rope.....45¢ 25¢

Cover's Saddlery Works:

Web and Leather Halters.....70¢

Jute and Manila Rope Halters.....70¢

Sisal Rope Halters.....70¢ 20¢

Jute, Manila and Cotton Rope Ties.....70¢

Sisal Rope Ties.....60¢ 10¢

Hammers—

Handled Hammers—

Heller's Machinists.....50¢ 50¢ 50¢

Heller's Farriers.....50¢ 50¢ 50¢

Magnetic Tack, Nos. 1, 2, 3, \$1.25, \$1.50,

\$1.75.....40¢ 10¢ 10¢ 10¢

Peck, Stow & Wilcox.....50¢

Fayette H. Plumb:

Plumb, A. E. Nail, 33½¢ 50¢ 33½¢ 10¢ 55¢

Engineers' and B. S. Hand.....50¢ 10¢ 70¢ 50¢ 10¢ 10¢ 70¢

Machinists' Hammers.....50¢ 10¢ 50¢ 10¢ 10¢

Riveting and Tinner's.....40¢ 70¢ 40¢ 10¢ 70¢

Sargent's C. S. New List.....40¢

Heavy Hammers and**Sledges—**

3 lb. and under.....lb. 55¢ 75¢ 10¢ 75¢

5 lb.....lb. 35¢ 40¢ 10¢ 75¢

Over 5 lb.....lb. 30¢

Wilkinson's Smith's.....94¢ @ 10¢ lb.

Handcuffs and Leg Irons

See Police Goods

Handles—

Agricultural Tool Handles—

Axe, Pick, etc.....50¢ 50¢ 10¢ 55¢

Hoe Rake, Fork, etc.....50¢ 50¢ 10¢ 55¢

Shovel, etc., Wood D Handles.....50¢ 50¢

Cross-Cut Saw Handles—

Atkins.....40¢ 55¢

Champion.....40¢ 45¢ 10¢

Disston's.....50¢

Mechanics' Tool Handles—

Auger, assorted.....gro. \$2.50 @ \$2.50

Broad Axl.....gro. \$1.25 @ \$1.50

Chisel Handles:

Apple Tanged Firmer, gro. ass'd.,

\$2.25 @ \$2.35; large, \$2.50 @ \$2.50.

Hickory Tanged Firmer, gro. ass'd.,

\$1.75 @ \$2.20; large, \$3.50 @ \$3.70.

Apple Socket Firmer, gro. ass'd.,

\$1.70 @ \$1.85; large, \$2.00 @ \$2.25.

Hickory Socket Firmer, gro. ass'd.,

\$1.60 @ \$1.75; large, \$1.75 @ \$2.00.

Hickory Socket Framing, gro. ass'd.,

\$2.50 @ \$2.75; large, \$2.60 @ \$2.85.

File, assorted.....gro. \$1.00 @ \$1.15

Hammer, Hatchet, Axe, etc.....40¢

Hand Saw, Furnished, doz. 70¢ 75¢

Not Furnished.....55¢ @ 60¢

Plane Handles:

Jack, doz. 55¢; Jack Bolted, 55¢ @ 60¢

Fore, doz. 55¢ @ 58¢; Fore, Bolted, 55¢ @ 60¢

Chapin-Stephens Co.:

Carving Tool.....40¢ 40¢ 10¢ 10¢

Chisel.....65¢ 65¢ 10¢

File and Axl.....65¢ 65¢ 10¢

Saw.....40¢ 40¢ 10¢ 10¢

Screw Driver.....40¢ 40¢ 10¢ 10¢

Millers Falls Adj. and Hatchet Auger

Handles.....15¢ 10¢

Nicholson Simplicity File Handle, P

gro.....\$0.25 @ \$1.50

Hangers—

Barn Door, New Pattern, Round

Groove, Regular:

Inch.....3 4 5 6 8

Doz.....\$0.85 1.20 1.50 1.90 2.30

Barn Door, New England Pattern,

Check Back, Regular:

Inch.....3 4 5 6

Doz.....\$1.30 1.75 2.50 3.00

Chicago Spring Butt Co.:

Friction.....25¢

Oscillating.....25¢

Big Twin.....25¢

Chisholm & Moore Mfg. Co.:

Baggage Car Door.....50¢

Elevator.....40¢

Railroad.....55¢

Cronk Hanger Co.:

Roller Axle.....60¢

Roller Bearing.....80¢ 10¢

Lane Bros. Co.:

Parlor, Ball Bearing.....\$4.15

Parlor, Standard.....\$3.35

Parlor, New Model.....\$2.85

Parlor, New Champion.....\$2.25

Barn Door, Standard.....50¢ 10¢ 10¢ 55¢

Special.....50¢ 10¢ 10¢ 55¢

Lawrence Bros.:

Advance.....60¢

Cleveland.....70¢

Crown.....60¢

New York.....60¢

Sterling.....60¢ 10¢

McKinney Mfg. Co.:

No. 1, Special.....\$15

No. 2, Standard.....\$18

Myers' Stayon Hangers and Track.....50¢ 10¢ (net)

Stowell Mfg. and Foundry Co.:

Acme Parlor Ball Bearing.....40¢

Atlas.....60¢

Badger Barn Door.....50¢

Baggage Car Door.....50¢

Climax Anti-Friction.....50¢

Elevator.....40¢

Express.....50¢

Interstate.....40¢

Lundy Parlor Door.....50¢

Magic.....50¢

Matchless.....60¢

Railroad.....60¢ 10¢

Street Car Door.....50¢

Steel, Nos. 300, 404, 500.....40¢ 15¢

Stowell Parlor Door.....50¢

Wild West, Nos. 300, 404, 500.....50¢

Zenith for Wood Track.....50¢

Taylor & Boggs Foundry Co.:

Kiddler's.....50¢ 15¢ 10¢ 55¢

Wilcox Mfg. Co.:

Bike Roller Bearing.....60¢ 10¢

C. J. Roller Bearing.....60¢ 10¢

Cycle Ball Bearing.....50¢

Dwarf Ball Bearing.....40¢

L. T. Roller Bearing.....60¢ 10¢ 55¢

New Era Roller Bearing.....50¢ 10¢

O. K. Roller Bearing.....60¢ 10¢ 55¢

Prindle, Wood Track.....60¢

Richards' Wood Track.....60¢

Richards' Steel Track.....50¢ 10¢

Specier Roller Bearing.....60¢ 10¢

Tandem Nos. 1 and 2.....60¢

Underwriters' Roller Bearing.....40¢

Velvet.....50¢

Wilcox Auditorium Ball Bearing.....30¢

Wilcox Barn Trolley No. 123.....40¢

Wilcox Elevator Door Hangers.....50¢

Wilcox Elevator Door Hangers.....50¢

No. 132.....40¢

Wilcox Fire Trolley, Roller

Bearing.....30¢

Wilcox Le Roy Noiseless Ball

Bearing.....30¢

Wilcox New Century.....50¢ 10¢ 10¢

Wilcox O. K. Steel Track.....50¢

Wilcox O. K. Trolley.....50¢

Wilcox Trolley Ball Bearing.....40¢

Wilcox Wideman Narrow Gauge

Ball Bearing.....40¢

Harness Menders—See**Menders.****Harness Snaps—See Snaps.****Hatches—**

McKinley's Perfect Hap # doz.....50¢

Wrought Haps, Staples, etc.—See

Wrought Goods.

Hatchets—

Best Brands.....50¢ 50¢ 10¢

Cheaper Brands.....50¢ 50¢ 10¢

Note.—Net prices often made.

Hay and Straw Knives—

See Knives.

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind:

(Victor; National; 1888 O. P.

Niagara; Clark's O. P.; Clark

Tip; Buffalo.)

No.....1 3 5

Doz. pair.....\$0.75 1.45 2.30

Mortise Shutter:

(L. & P. O. S. Dixie, etc.)

No.....1 3 5

Doz. pair.....\$0.60 .55 .52 .45

Mortise Reversible Shutter, (Buffalo,

etc.)

No.....1 1½ 2

Doz. pair.....\$0.65 .60 .55 .50

North's Automatic Blind Fixtures, No.

2, for Wood, \$9.00; No. 3, for Brick,

\$11.50.....10¢

Parker.....70¢ 75¢

Reading's Gravity.....75¢ 10¢

Sargent's, Nos. 1, 3, 5, 11 & 13.....70¢ 10¢ 70¢ 20¢

Stanley's Steel Gravity Blind Hinges,

3 doz. sets, without screws, \$0.30;

with screws, \$1.15.

Wrightsville Hardware Co.:

O. S. Lull & Porter.....80¢ 25¢

Acme, Lull & Porter.....75¢ 10¢

Queen City Reversible.....75¢ 10¢

Stenger's Positive Locking, No. 1 &

Shepard's Noiseless, Nos. 90, 65, 55,

5.....70¢ 10¢

Niagara, Gravity Locking, Nos. 1, 3 &

1908, Old Patn. Nos. 1, 3 & 5.....75¢ 75¢

Tip Patn. Nos. 1, 3 & 5.....75¢ 75¢

Buffalo Gravity Locking, Nos. 1, 3 &

5.....75¢ 75¢

Shepard's Double Locking, Nos. 30

& 25.....70¢ 10¢

Champion Gravity Locking, No. 75.....75¢ 75¢

Steamboat Gravity Locking, No. 10.....75¢ 75¢

Pioneer, Nos. 60, 45 & 54.....75¢ 75¢

Empire, Nos. 101 & 103.....70¢ 75¢

W. H. Co.'s Mortise Gravity Locking,

No. 2.....60¢ 10¢

Gate Hinges—

Clark's or Shepard's—Doz. sets:

No.....1 2 3

Hinges with Latches.....\$1.50 1.90 2.65

Hinges only.....\$1.30 1.50 2.00

Latches only......60 .60 .65

New England:

With Latch.....doz.....\$1.55

Without Latch.....doz.....\$1.25

Reversible Self-Closing:

With Latch.....doz.....\$1.80

Without Latch.....doz.....\$1.45

Western:

Myers' Noiseless Store Ladders.....50%
Ladies' Melting—
 L. & G. Mfg. Co.....25%
 P. S. & W.....50%
 Reading.....50%
 Sargent & Co.....45%10%
Lanterns—Tubular—
 Regular Tubular.....doz. \$4.35@4.75
 Lift Tubular.....doz. \$4.75@5.25
 Hinge Tubular.....doz. \$4.75@5.25
 Other Styles.....doz. \$4.75@5.25
Bull's Eye Police—
 No. 1, 2 1/2 inch.....\$2.50@2.75
 No. 2, 3 inch.....\$2.75@3.00
Latches, Thumb—
 Keegan's Latches.....doz. 30@33c
Lawn Mowers—
 See Mowers, Lawn.
Leaders, Cattle—
 Small.....doz. 65c; large, 60c
 Covert Mfg. Co.....45%25%
Lemon Squeezers—
 See Squeezers, Lemon.
Lifters, Transom—
 Solid Grip, Rayson Mfg. Co.....80%
 R. & C.....33%25%
Lines—
 Wire Clothes, Nos. 18 19 20
 100 feet.....\$2.20 2.00 1.65
 75 feet.....\$1.80 1.70 1.30
Ossawa Mills—
 Crown Solid Braided Chalk.....\$3.35
 Mason's, No. 0 to No. 5.....33%25%
 Samson Cordage Works:
 Solid Braided Chalk, No. 0 to 3.....10%
 Silver Lake Braided Chalk, No. 0, \$6.00;
 No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50;
 4, \$8.00; 5, \$8.50;
 6, \$9.00;
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 106, \$59.00;
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F. J. Meyers' Mfg. Co.:		
Electric Light.....	gr.	\$11.00
Hunter's Genuine.....	gr.	\$11.50
No Name, Hunter's.....	gr.	\$11.00
Standard.....	gr.	\$11.00
Shaker (Barley's Pat.) Flour Sifters.....	doz.	\$2.00
Sieves, Tin Rim—		
Per dozen		
Mesh.....	1 1/2	13 20
Black, full size.....	\$0.95	98 1.00 1.10
Plated, full size.....	\$1.05	1.08 1.10 1.20
Black, scant.....	\$0.75	.80 .83
Sieves, Wooden Rim—		
Nested, 10, 11 and 12 Inch.		
Mesh 18, Nested, doz.....	\$0.65	0.75
Mesh 20, Nested, doz.....	.75	.85
Mesh 24, Nested, doz.....	.90	1.00
Sinks—		
Cast Iron—		
Standard list.....		
NOTE:—There is not entire uniformity in lists used by jobbers.		
Wrought Steel—		
New Era, Galv'd and Enamelled.....		
New Era, Painted.....		
L. & G. Mfg. Co., Galvanized.....		
L. & G. Mfg. Co., Enamelled.....		
Skins, Wagon—		
Cast Iron.....		
Malleable Iron.....		
Steel.....		
Slates		
Factory Shipments.		
"D" Slates.....		
Unexcelled, etc., Noiseless Slates.....		
Victoria, etc., Noiseless Slates.....		
Wire Bound.....		
Web Hinge.....		
Slaw Cutters—See Cutters.		
Slicers, Vegetable—		
Sterling \$ 2.00.....		
Snaps, Harness—		
German.....		
Covert Mfg. Co.:		
Derby.....		
High Grade.....		
Jockey.....		
Trojan.....		
Yankee.....		
Yankee, Roller.....		
Covert's Saddlery Works:		
Crown.....		
German.....		
Model.....		
Triumph.....		
W. & E. T. Fitch Co.:		
Bristol.....		
Empire.....		
German.....		
National.....		
Perfect.....		
Clipper.....		
Champion.....		
Security.....		
Victor.....		
Oneida Community.....		
Solid Steel.....		
S. C. Id. Swift.....		
Bergant's Patent Guarded.....		
Snaths—		
Scythe.....		
Snips, Tinner's—See Shears.		
Soldering Irons—		
See Irons, Soldering.		
Spoke Trimmers—		
See Trimmers, Spoke.		
Spoons and Forks—		
Silver Plated—		
Good Quality.....		
Cheap.....		
International Silver Co.:		
1847 Rogers Bros. and Rogers & Hamill.....		
Rogers & Bros., William Rogers Eagle Brand.....		
Anchor, Rogers Brand.....		
Wm. Rogers & Son.....		
Simeon L. & Geo. H. Rogers Co.:		
Silver Plated Flat Ware.....		
No. 17 Silver Plated Ware.....		
Miscellaneous—		
German Silver.....		
Yukon Silver.....		
Simeon L. & Geo. H. Rogers Co.:		
German or Nickel Silver, Special list.....		
Tinned Iron—		
Teas.....		
Tables.....		
Springs—		
Door—		
Good (Coll.).....		
Star (Coll.).....		
Torrer's Rod, 39 in.....		
Victor (Coll.).....		
Carriage, Wagon, &c.		
24 in. and wider:		
Black or 1/2 Bright, lb.....		
Bright, lb.....		
Painted Seat Springs:		
1 1/2 x 2 x 26 and smaller, per pr.....		
1 1/2 x 2 x 28 per pr.....		
1 1/2 x 3 x 28 and narrower, per pr.....		
Cliff's Springs:		
Booster.....		
Seat.....		
Pole per pair, 1/2 in. \$1.10; 3/4 in. \$1.25		
Sprinklers, Lawn—		
Enterprise.....		
Philadelphia No. 1, # doz. \$1.25; No. 2, \$1.50; No. 3, \$1.75		
Squares—		
Nickel plated.....		
Steel and Iron.....		
Rosewood Hdl Try Square and T-Bevels.....		
Bevels.....		
Iron Hdl. Try Squares and T-Bevels.....		
Dialton's Try Sq. and T-Bevels.....		
Waterbottom's Try and Miter.....		
Squeezers—Lemon—		
Wood, Common, gro., No. 0, \$5.35		
to \$5.60; No. 1, \$6.25 to \$6.50.		

Wood, Porcelain Lined:		
Cheap.....		
Good Grade.....		
Tinned Iron.....		
Iron, Porcelain Lined doz. \$2.90 to \$3.25		
Staples—		
Barbed Blind.....		
Electricians', Association list.....		
Fence Staples, same price as Barbed Wire. See Trade Report.		
Poultry Netting, Staples.....		
Grand Crossing Tack Co.'s Hat.....		
Steels, Butchers'—		
Dick's.....		
Foster Bros'.....		
Hartzell Cutlery Co.....		
C. & A. Hoffmann's.....		
Steelyards—		
Stocks and Dies—		
Blacksmiths'.....		
Gardner Die Stocks No. 1.....		
Green River.....		
Lightning Screw Plate.....		
Little Giant.....		
Reece's New Screw Plates.....		
Curtis Reversible Hatchet Die Stock.....		
Stone—		
Scythe Stones—		
Chicago Wheel & Mfg. Co.:		
Gem Corundum, 10 inch, \$5.00 per gro., 12 inch, \$10.00		
Pike Mfg. Co. 1901 list:		
Black Diamond S. S.....		
Lamotte S. S.....		
White Mountain S. S.....		
Green Mountain S. S.....		
P. & I. Indian Pond S. S.....		
No. 1 Indian Pond S. S.....		
No. 2 Indian Pond S. S.....		
Leader Red End S. S.....		
Balance of 1901 list.....		
Oil Stones, &c.		
Chicago Wheel & Mfg. Co. 1901 list:		
Gem Corundum Oil, Double Grit.....		
Gem Corundum Oil, Single or Double Grit.....		
Gem Corundum Razor Hones.....		
Pike Mfg. Co. 1901 list:		
Arkansas Stone, No. 1, 3 to 5 in.....		
Arkansas Stone, No. 1, 5 to 8 in.....		
Arkansas Stone, No. 1, 8 to 11 in.....		
Lily White Washita 4 to 8 in.....		
Washita Stone, Extra, 4 to 8 in.....		
Washita Stone, No. 1, 4 to 8 in.....		
Washita Stone, No. 2, 4 to 8 in.....		
Lily White Slips.....		
Rosy Red Slips.....		
Washita Slips, Extra.....		
Washita Slips, No. 1.....		
India Oil Stones (entire list).....		
Hindustan No. 1, Regular.....		
Hindustan No. 1, Small.....		
Axe Stones (all kinds).....		
Turkey Oil Stones, ex. 5 to 8 in.....		
Queer Creek Stones, 4 to 8 in.....		
Queer Creek Slips.....		
Sand Stone.....		
Belgian, German and Swaty Razor Hones.....		
Natural Grit Carving Knife Hones.....		
Quick Edge Pocket Knife Hones.....		
Mounted Kitchen Sand Stone.....		
Tattle Mills:		
Emery Oil, # doz. \$5.00.....		
Stoners—Cherry—		
Enterprise.....		
Stops, Bench—		
Millers Falls.....		
Morrill's.....		
Morrill's No. 2.....		
Plane—		
Chapin-Stephens.....		
Window—		
Ives' Patent.....		
Stove Boards—		
See Boards, Stove.		
Stove Polish—See Polish, Stove.		
Strainers, Pump—		
Diamond Joe Pump Strainers.....		
Straps—		
Cary's Universal, case lots.....		
Hame—		
Covert's Saddlery Works.....		
Stretchers, Carpet—		
Cast Iron, Steel Points.....		
Socket.....		
Strops, Razor—		
Smith & Hemenway Co.....		
Stuffers, Sausage—		
Enterprise Mfg. Co.....		
National Specialty Mfg. Co., list Jan. 1, '97.....		
Sweepers, Carpet—		
National Sweeper Co.....		
Marion, Roller Bearing, regular finishes, full Nickel.....		
Marion Queen, Roller Bearing, Fancy Veneers, full Nickel.....		
Monarch, Roller Bearing, Nickel.....		
Monarch, Roller Bearing, Jap'ned.....		
Marion Queen, Roller Bearing, Regular Finishes, full Nickel.....		
Transparent, Roller Bearing, Plate Glass Top, Nickel.....		
Monarch Extra, Roller Bearing, (17-inch case), Nickel.....		
Monarch Extra, Roller Bearing (17-inch case), Japanned.....		
Perpetual, Regular Bearings, Nk.....		
Perpetual, Regular Bearings, Nk.....		
NOTE:—Discount of 30c per dozen on three-dozen lots. Discount of \$1 per dozen on five-dozen lots.		
Tacks Brads, &c.—		
List Jan. 15, '99.		
Carpet Tacks, American 90c to \$1.00.....		
American Cut Tacks.....		
Swedes Iron Tacks.....		
Swedes Upholsterers' Tacks.....		
Gimp Tacks.....		

Lace Tacks.....		
Trimmers' Tacks.....		
Trimming Glass Tacks.....		
Bill Posters' and Railroad Tack.....		
Hungarian Nails.....		
Common and Patent Brads.....		
Trunk and Clout Nails.....		
NOTE:—The above prices are for straight weights. An extra 5% is given Star Weights and an extra 10% on Standard Weights.		
Miscellaneous—		
Double Point Tacks.....		
Steel Wire Brads, R. & E. Mfg. Co.'s list.....		
See also Nail Wire.		
Tanks, Oil—		
Emerald, S. S. & Co.....		
Queen City S. S. & Co., 60-gal.....		
Queen City S. S. & Co., 60-gal.....		
Tapes, Measuring—		
American Asses' Skin.....		
Patent Leather.....		
Chesterman's.....		
Eddy's Metal.....		
Keuffel & Esser Co., Steel and Metallic.....		
Lower list, 1899.....		
Larkin's Steel.....		
Larkin's Metallic.....		
Teeth, Harrow—		
Steel Harrow Teeth, plain or head-ed, base per lb.....		
Thermometers—		
Tin Case.....		
Ties, Bale—Steel Wire.....		
Single Loop.....		

Brass Surface:	
Brass King, Single Surface, open back.....	\$3.00
Nickel Plate Surface:	
No. 1001 Nickel Plate, Single Surface.....	\$3.00
Washers—	
Leather, Axle—	
Solid.....	85¢10¢10¢85¢10¢10¢10¢
Patent.....	85¢10¢85¢20¢
Coil.....	1/4 1 1 1/4 1 1/4 Inch.
10c 11c 12c 13c per 100	
Iron or Steel—	
Size bolt.....	5-16 3/4 1/2 3/4 1
Washers.....	\$5.00 5.00 5.70 5.50 5.30
In lots less than one keg add 1/2c per lb., 5-lb. boxes add 1/4c to list.	
Cast Washers—	
Over 1/2 inch, barrel lots, per lb.....	1 1/4@1 1/4c
Washer Cutters—	
See Cutters, Washer.	
Washing Machines—	
See Machines, Washing.	
Water Coolers—	
See Coolers, Water.	
Wedges—	
Oil Finish.....	lb. \$2.00@3.10c
Weights—	
Hitching—	
Covert's Saddlery Works.....	60¢10¢

Sash—	
Per ton, f.o.b. factory:	
Eastern District.....	\$20.00@21.00
Western, Central and Southern Districts.....	\$22.50@23.00
Well Buckets, Galvanized	
See Pails, Galvanized.	
Wheels, Well—	
8-in.....	\$1.55@1.65
10-in.....	\$1.75@2.00
12-in.....	\$2.35@3.50
14-in.....	\$3.50@3.75
Wire and Wire Goods—	
Bright and Annealed:	
6 to 9.....	72 1/2¢@73 1/2¢10¢
10 to 18.....	72 1/2¢@10¢7 1/2¢10¢5¢
19 to 26.....	75¢10¢2 1/4¢75¢10¢7 1/2¢
27 to 36.....	75¢10¢7 1/2¢80¢2 1/2¢
Galvanized:	
6 to 18.....	70¢@70¢5¢
19 to 26.....	72 1/2¢@73 1/2¢10¢
27 to 36.....	72 1/2¢@10¢7 1/2¢10¢5¢
Coppered:	
6 to 9.....	70¢5¢@70¢10¢
10 to 18.....	70¢10¢@70¢10¢5¢
19 to 26.....	75¢7 1/2¢@75¢10¢2 1/4¢
27 to 36.....	75¢10¢@75¢10¢5¢
Tinned:	
6 to 14.....	75¢@75¢7 1/2¢
15 to 18.....	72 1/2¢@73 1/2¢
19 to 26.....	70¢5¢@70¢5¢5¢
27 to 36.....	70¢@70¢5¢

Annealed Wire on Spools.....		70¢5¢@70¢10¢
Brass and Copper Wire on Spools.....		60¢5¢@80¢10¢
Brass, list Feb. 26, '96.....		30¢
Copper, list Feb. 26, '96.....		15¢
Cast Steel Wire.....		50¢
Stubs' Steel Wire.....		\$6.00 to £. 40¢
Wire Clothes Line, see Lines.		
Wire Picture Cord, see Cord.		
Bright Wire Goods—		
List April 1, 1901.....		85¢10¢
Wire Cloth and Netting—		
Galvanized Wire Netting.....		30¢@90¢85¢
Painted Screen Cloth per 100 ft.....		\$1.10
Light Hardware Grade:		
2-18 Mesh, Plain (Sc. list) sq. ft.....		1 1/4¢@1 1/4c
2-18 Mesh, Galv. (Sc. list) sq. ft.....		2 1/4¢@3 1/4c
Wire, Barb—See Trade Report.		
Wire, Rope—See Rope, Wire.		
Wrenches—		
Agricultural.....		70¢10¢@75¢5¢
Case lots.....		75¢10¢
Acme.....		80¢10¢
Alligator.....		70¢
Baxter's S.....		80¢10¢
Bull Dog.....		70¢
Bemis & Call's.....		35¢5¢
Adjustable S.....		40¢
Briggs' Pattern.....		30¢10¢
Combination Black.....		40¢5¢

Combination Bright.....		40¢
Cylinder or Gas Pipe.....		55¢
Extra Heavy.....		45¢
Merrick's Pattern.....		50¢
No. 3 Pipe, Bright.....		55¢
Bindley Automatic.....		30¢
Boardman's.....		33 1/4¢
Coe's genuine.....		40¢10¢5¢5¢
Coe's "Mechanics".....		40¢10¢10¢5¢5¢
Donohue's Engineer.....		40¢10¢
Eagle.....		50¢10¢
Elgin Wrenches.....		40¢
Elgin Monkey Wrench Pipe Jaws.....		33 1/4¢
Gem Pocket.....		30¢
Hercules.....		70¢
Knife Handle, Machinists' (W. & B.).....		50¢10¢
Case lots.....		50¢5¢
Improved Pipe (W. & B.).....		90¢
Solid Handles, P. S. & W.....		50¢50¢5¢
8 1/2 in.....		65¢
Triumph.....		60¢10¢
Vulcan Chain.....		50¢
Wrought Goods—		
Staples, Hooks, &c., list March 17.....		90¢@90¢10¢
Yokes, Neck.....		70¢
Covert Saddlery Works, Trimmer.....		70¢
Covert Saddlery Works, Neck Yoke.....		70¢
Yokes, Ox, and Ox Bows.....		70¢
Fort Madison's Farmers & Freighters'.....		list net
Zinc—		
Sheet.....		lb 6 1/4¢@6 1/4c

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.	
Lead, English white, in Oil.....	7 1/2 @ 9 1/2
Lead, American White, in Oil:	
Lots of 500 lb or over.....	8 @ 8
Lots less than 500 lb.....	8 1/2 @ 8 1/2
Lead, White, in oil, 25 lb tin.....	8 @ 8
Lead, White, in oil, 12 1/2 lb tin.....	8 1/2 @ 8 1/2
Lead, White, in oil, 1 to 5 lb asorted tins, add to keg price.....	1 @ 1
Lead, White, Dry in bbls.....	5 1/2 @ 5 1/2
Lead, American. Terms: On lots of 500 lbs. and over, 60 days, or 2% for cash if paid in 15 days from date of invoice.	
Zinc, American, dry.....	4 1/2 @ 4 1/2
Zinc, Paris, Red Seal, dry.....	8 1/2 @ 8 1/2
Zinc, Paris, Green Seal, dry.....	9 1/2 @ 9 1/2
Zinc, Antwerp, Red Seal, dry.....	8 1/2 @ 8 1/2
Zinc, Antwerp, Green Seal, dry.....	8 1/2 @ 8 1/2
Zinc, V. M. French, in Poppy Oil, Green Seal:	
Lots of 1 ton and over.....	12 1/2 @ 12 1/2
Lots of less than 1 ton.....	12 1/2 @ 12 1/2
Zinc, V. M. French, in Poppy Oil, Red Seal:	
Lots of 1 ton and over.....	10 1/2 @ 11 1/4
Lots of less than 1 ton.....	11 @ 11 1/4
Discounts.—V. M. French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%.	
Dry Colors.	
Black, Carbon.....	5 @ 8
Black, Drop, Amer.....	4 @ 7
Black, Drop, Eng.....	7 @ 11
Black, Ivory.....	12 @ 21
Lamp, Com.....	4 1/2 @ 8
Blue, Celestial.....	30 @ 35
Blue, Chinese.....	30 @ 35
Blue, Prussian.....	28 @ 34
Blue, Ultramarine.....	4 @ 20
Brown, Spanish.....	1 @ 1
Brown, Vandyke, Amer.....	14 @ 24
Brown, Vandyke, Foreign.....	24 @ 34
Carmine, No. 40.....	2 @ 2.75
Green, Chrome, ordinary.....	5 @ 6 1/2

Green, Chrome, pure.....		19¢@23
Lead, Red, bbls. 1/2 bbls. and kegs:		
Lots less than 500 lb.....		5 1/2¢
Lots 500 lb or over.....		5¢
Litharge, bbls. 1/2 bbls. and kegs:		
Lots less than 500 lb.....		5 1/2¢
Lots 500 lb or over.....		5¢
Ocher, French Washed.....		13¢@14
Ocher, Dutch Washed.....		4 1/2¢@5
Ocher, American.....		\$10.00@15.00
Orange Mineral, English.....		8 1/2¢@10 1/2¢
Orange Mineral, French.....		11¢@12
Orange Mineral, German.....		8 1/2¢@10 1/2¢
Orange Mineral, American.....		7 1/2¢@8
Red, Indian, English.....		4 1/2¢@8 1/2¢
Red, Indian, American No. 1.....		3¢@3 1/2¢
Red, Turkey, English.....		4¢@6
Red, Tuscan, English.....		7¢@10
Red, Venetian, Amer.....		50¢@1.50
Red Venetian, English.....		\$1.00@2.00
Sienna, Italian, Burnt and		
Powdered.....		3 1/2¢@7 1/2¢
Sienna, Ital., Raw, Powd.....		3 1/2¢@7 1/2¢
Sienna, American, Burnt and		
Powdered.....		1 1/2¢@2
Talc, French.....		\$1.25@1.50
Talc, American.....		90¢@1.10
Terra Alba, French.....		95¢@1.00
Terra Alba, English.....		95¢@1.00
Terra Alba, American No. 2.....		45¢@45
Umber, Turkey, Bnt. & Pow.....		24¢@34
Umber, Turkey, Raw & Powd.....		24¢@34
Umber, Bnt. Amer.....		14¢@2
Umber, Raw, Amer.....		14¢@2
Yellow, Chrome.....		10 1/2¢@25
Vermilion, American Lead.....		10¢@40
Vermilion, Quicksilver, bulk.....		67¢
Vermilion, Quicksilver, bags.....		71¢
Vermilion, English, Import.....		80¢@85
Vermilion, Chinese.....		\$1.05@1.20
Colors in Oil.		
Black, Lampblack.....		13¢@14
Blue, Chinese.....		35¢@40
Blue, Prussian.....		32¢@35
Blue, Ultramarine.....		13¢@16

Brown, Vandyke.....		9 1/2¢@13
Green, Chrome.....		10¢@12
Green, Paris.....		9¢@11
Sienna, Raw.....		10¢@13
Sienna, Burnt.....		10¢@13
Umber, Raw.....		9 1/2¢@12
Umber, Burnt.....		9 1/2¢@12
Miscellaneous.		
Barytes, Foreign, 1/2 ton.....		\$19.00@21.00
Barytes, Amer. floated.....		19.00@20.00
Barytes, Crude, No. 1.....		9.00@10.00
Chalk, in bulk.....		2.50¢@2.90
Chalk, in bbls.....		100¢@35
China Clay, English.....		12.00¢@17.50
Coal, Oxide.....		2.25¢@2.50
Whiting, Common.....		40¢@.60
Whiting, Gilders.....		.45¢@.65
Whiting, extra Gilders.....		.55¢@.68
Putty.		
In bladders.....		\$2.25
In bulk.....		2.25
In cans, 1 lb to 5 lb.....		3.25
In cans 12 lb to 25 lb.....		2.25
Spirits Turpentine.		
In Southern bbls.....		48¢@49 1/2¢
In machine bbls.....		48 1/2¢@49
Glue.		
Cabinet.....		11 1/4¢@16
Extra White.....		18¢@23
French.....		12¢@40
Irish.....		13 1/4¢@16
Low Grade.....		9¢@12
Medium White.....		14 1/2¢@16 1/2¢
Animal, Fish and Vege-		
table Oils.		
Linseed, City, raw.....		7¢@10 1/2¢

Linseed, City, boiled.....		68¢@69
Linseed, State and West, raw.....		63¢@65
Linseed, raw Calcutta seed.....		63¢@65
Lard, Prime.....		79¢@80
Lard, Extra No. 1.....		62¢@68
Lard, No. 1.....		55¢@60
Cotton-seed, Crude.....		45¢@48
Cotton-seed, Summer Yellow, prime.....		45¢@48
Cotton-seed, Summer Yellow, off grades.....		45¢@45 1/2¢
Sperm, Crude.....		71¢@73
Sperm, Natural Spring.....		71¢@73
Sperm, Bleached Spring.....		74¢@76
Sperm, Natural Winter.....		75¢@77
Sperm, Bleached Winter.....		75¢@77
Tallow, Prime.....		62¢@64
Whale, Crude.....		45¢@47
Whale, Natural Winter.....		45¢@47</

